CUADERNILLO DE PREGUNTAS

Saber 3°, 5° y 9° 2015

Cuadernillo de prueba

EJEMPLO DE PREGUNTAS
Saber 9° Matemáticas

MINEDUCACIÓN

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Adaptación y elaboración del documento
Martha Jeanet Castillo Ballén

Diseño y diagramación
Gustavo Andrés Álvarez Mejía
Alejandra Guzmán Escobar

ISBN de la versión digital: En trámite

Bogotá D.C., mayo de 2016

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PAZ EQUIDAD EDUCACIÓN

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SABER 9

SABER 9 - PRUEBA DE MATEMÁTICAS

• Pregunta 1.

La figura 1 muestra el molde que permite armar un sólido y la figura 2 muestra una de las vistas del sólido armado.

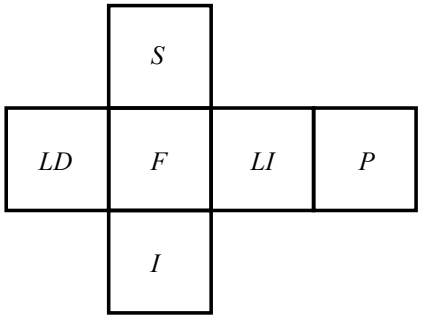


Figura 1. Desarrollo de un sólido.

F: frontal
LD: derecha
LI: izquierda
S: superior
I: inferior
P: posterior

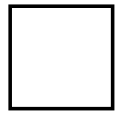


Figura 2. Vista del sólido.

¿A qué vista del sólido corresponde la figura 2?

A. A cualquiera de las 6 vistas, pues con el molde se arma un cubo.

B. A 4 de las 6 vistas, pues con el molde se arma un prisma rectangular.

C. A 2 de las 6 vistas, pues solamente la cara frontal y posterior del sólido son cuadradas.

D. A 1 de las 6 vistas del sólido, pues cada vista del sólido es distinta de las demás.

• Estructura

Competencia	Razonamiento
Componente	Espacial - métrico
Afirmación	Analizar la validez o invalidez de usar procedimientos para la construcción de figuras planas y cuerpos con medidas dadas.
Nivel de desempeño	Mínimo
Respuesta Correcta	A

- **Resultados a nivel nacional y de Entidad Territorial certificada (ETC)**

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Amazonas	54.5%	12.7%	20.9%	9.5%	2.4%	503
Antioquia	68.5%	11.8%	10.7%	7.7%	1.3%	15849
Apartadó	66.4%	12.2%	11.9%	7.9%	1.6%	959
Arauca	74.2%	9.7%	9.9%	5.5%	0.7%	1698
Armenia	76.4%	9.2%	7.4%	5.9%	1.2%	2085
Atlántico	62.2%	14.3%	13.9%	8.1%	1.5%	4927
Barrancabermeja	74.4%	8.5%	8.7%	6.4%	2.1%	1556
Barranquilla	72.2%	10.7%	9.3%	6.7%	1.2%	9859
Bello	76.4%	9.1%	7.7%	6.0%	0.8%	3012
Bogotá, D.C.	82.2%	6.8%	5.8%	4.4%	0.9%	56273
Bolívar	57.2%	15.3%	16.6%	9.1%	1.8%	7352
Boyacá	77.6%	8.4%	8.2%	5.4%	0.3%	6710
Bucaramanga	83.9%	6.3%	5.0%	4.2%	0.6%	3788
Buenaventura	58.6%	14.2%	15.3%	10.3%	1.6%	2443
Buga	75.0%	9.0%	7.3%	7.3%	1.4%	701
Caldas	70.2%	10.5%	10.9%	8.1%	0.4%	3576
Cali	75.6%	9.4%	7.8%	6.1%	1.0%	15344
Caquetá	59.8%	13.3%	15.0%	9.1%	2.8%	1554
Cartagena	65.7%	12.2%	12.4%	8.5%	1.2%	8279
Cartago	76.7%	8.8%	8.2%	5.4%	0.9%	1046
Casanare	77.1%	8.4%	8.7%	5.6%	0.3%	2175
Cauca	60.5%	12.3%	16.6%	9.5%	1.2%	7502
Cesar	61.2%	13.7%	14.6%	9.3%	1.2%	4685
Chocó	49.6%	16.5%	19.7%	12.5%	1.8%	1702
Chía	87.5%	4.4%	4.0%	4.0%	0.2%	1324
Ciénaga	55.9%	16.4%	14.4%	11.5%	1.8%	1055
Cundinamarca	79.8%	7.4%	7.4%	5.0%	0.4%	12605
Córdoba	57.7%	14.9%	16.1%	10.4%	0.8%	8936
Cúcuta	76.8%	8.5%	8.5%	5.8%	0.4%	5700
Dosquebradas	79.9%	8.1%	7.0%	4.6%	0.3%	1210
Duitama	87.3%	5.4%	3.9%	3.4%	0.0%	1081
Envigado	85.5%	5.8%	3.9%	3.5%	1.4%	1299
Facatativá	81.0%	6.6%	6.6%	5.0%	0.8%	972
Florencia	71.2%	9.9%	11.2%	6.6%	1.0%	1290
Floridablanca	84.2%	6.5%	4.8%	4.0%	0.5%	1735
Fusagasugá	80.0%	6.8%	7.5%	4.1%	1.7%	888
Girardot	73.6%	10.2%	9.3%	6.4%	0.5%	753
Girón	77.7%	8.6%	8.5%	5.1%	0.1%	1082

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Guainía	63.4%	10.8%	16.4%	8.0%	1.4%	213
Guaviare	64.7%	11.4%	14.3%	7.5%	2.0%	638
Huila	72.2%	9.3%	11.4%	6.5%	0.7%	4868
Ibagué	75.9%	9.5%	8.1%	5.8%	0.7%	4261
Ipiales	79.9%	7.7%	6.5%	5.4%	0.5%	887
Itagüí	76.1%	10.1%	8.2%	4.7%	0.9%	1396
Jamundí	71.8%	10.6%	9.0%	7.5%	1.3%	871
La Guajira	59.7%	14.1%	16.8%	8.7%	0.7%	2122
Lorica	55.5%	14.5%	17.1%	12.2%	0.7%	1137
Magangué	62.8%	13.1%	14.7%	8.7%	0.6%	938
Magdalena	58.9%	14.9%	15.7%	9.3%	1.2%	5494
Maicao	59.8%	13.4%	16.6%	9.0%	1.2%	1231
Malambo	70.6%	9.0%	11.8%	8.5%	0.2%	646
Manizales	77.1%	7.9%	8.2%	6.0%	0.7%	2358
Medellín	75.3%	9.8%	7.6%	5.9%	1.4%	14697
Meta	71.8%	10.6%	10.8%	6.3%	0.6%	3749
Montería	66.6%	12.2%	12.4%	8.0%	0.8%	3470
Mosquera	84.6%	6.0%	5.2%	4.0%	0.2%	1038
Nariño	68.9%	10.6%	12.1%	6.5%	1.9%	5699
Neiva	77.5%	8.0%	7.6%	5.9%	1.0%	2661
Norte de Santander	72.2%	10.1%	10.7%	6.4%	0.7%	4830
Palmira	78.4%	8.5%	7.5%	4.8%	0.9%	2076
Pasto	81.6%	6.3%	6.6%	5.0%	0.5%	2821
Pereira	77.8%	8.4%	6.7%	6.1%	1.0%	3216
Piedecuesta	80.1%	7.5%	7.2%	4.3%	0.8%	968
Pitalito	78.4%	7.3%	7.1%	6.3%	0.9%	1016
Popayán	74.5%	9.2%	8.6%	6.7%	1.1%	2141
Putumayo	68.5%	10.8%	13.4%	6.2%	1.2%	2546
Quibdó	56.4%	15.0%	16.3%	10.5%	1.9%	1070
Quindío	76.0%	8.7%	8.2%	6.0%	1.1%	1677
Riohacha	67.0%	11.0%	13.5%	7.5%	1.0%	1338
Rionegro	81.7%	6.8%	6.9%	3.5%	1.0%	908
Risaralda	68.0%	10.6%	12.4%	7.6%	1.4%	1802
Sabaneta	80.8%	6.9%	2.5%	4.6%	5.1%	475
Sahagún	68.5%	10.8%	12.1%	8.2%	0.4%	976
San Andrés	73.1%	10.0%	9.0%	6.7%	1.2%	420
Santa Marta	67.7%	12.3%	11.1%	7.8%	1.2%	4381
Santander	76.9%	8.4%	8.2%	5.9%	0.7%	5407
Sincelejo	70.2%	12.1%	10.3%	6.6%	0.7%	2437

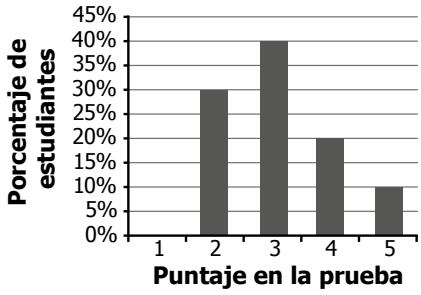
Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Soacha	79.0%	7.1%	7.6%	5.5%	0.8%	4454
Sogamoso	85.2%	5.2%	5.4%	4.0%	0.3%	1172
Soledad	71.1%	11.9%	9.1%	6.3%	1.7%	3696
Sucre	59.7%	14.8%	15.4%	9.2%	0.9%	5380
Tolima	65.6%	11.7%	14.6%	7.5%	0.6%	6450
Tuluá	75.6%	9.7%	7.7%	6.8%	0.2%	1636
Tumaco	53.9%	14.7%	18.5%	11.5%	1.3%	1292
Tunja	85.5%	5.1%	4.8%	4.3%	0.2%	1432
Turbo	54.1%	14.4%	19.5%	11.5%	0.5%	1310
Uribia	43.1%	16.9%	27.2%	11.5%	1.3%	313
Valle del Cauca	70.0%	10.8%	10.9%	7.4%	0.9%	5858
Valledupar	67.0%	12.7%	11.6%	7.5%	1.2%	3718
Vaupés	59.6%	9.6%	19.2%	11.7%	0.0%	240
Vichada	68.4%	11.1%	11.8%	7.9%	0.7%	431
Villavicencio	78.9%	7.8%	7.5%	5.0%	0.7%	3816
Yopal	79.1%	8.6%	7.2%	4.9%	0.1%	1380
Yumbo	74.9%	9.6%	9.2%	5.7%	0.5%	930
Zipaquirá	83.6%	5.6%	5.4%	5.3%	0.2%	1081
Colombia	72.7%	9.9%	9.8%	6.6%	1.0%	346976

*Es posible que los porcentajes mostrados no sumen exactamente 100 debido a aproximaciones decimales.

• Pregunta 2.

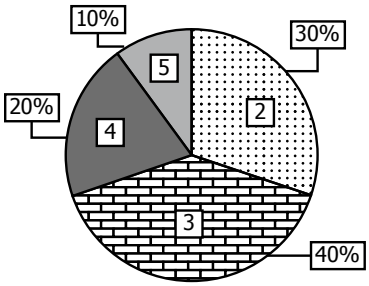
La gráfica muestra los resultados de una prueba de matemáticas.



Gráfica

El diagrama circular que corresponde a la gráfica es

A.



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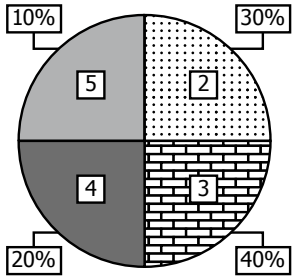

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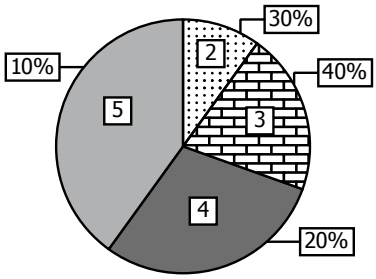
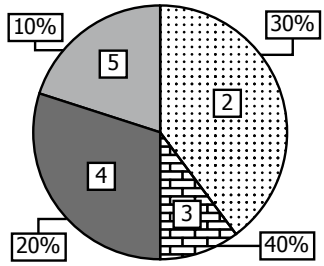


D.



• Estructura

Competencia	Comunicación
Componente	Aleatorio
Afirmación	Reconocer relaciones entre diferentes representaciones de un conjunto de datos y analizar la pertinencia de la representación.
Nivel de desempeño	Mínimo
Respuesta Correcta	A

- **Resultados a nivel nacional y de Entidad Territorial certificada (ETC)**

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Amazonas	72.6%	9.5%	10.9%	4.8%	2.2%	503
Antioquia	74.3%	10.0%	9.2%	5.0%	1.5%	15849
Apartadó	70.7%	10.5%	11.4%	5.1%	2.3%	959
Arauca	82.0%	7.8%	5.2%	3.8%	1.1%	1698
Armenia	79.0%	7.7%	8.2%	4.1%	1.1%	2085
Atlántico	70.2%	11.8%	10.7%	5.6%	1.8%	4927
Barrancabermeja	79.3%	7.6%	7.5%	3.5%	2.1%	1556
Barranquilla	78.8%	8.3%	7.8%	3.6%	1.5%	9859
Bello	80.7%	8.1%	7.1%	3.3%	0.8%	3012
Bogotá, D.C.	86.0%	5.4%	5.2%	2.5%	0.9%	56273
Bolívar	67.1%	12.3%	11.7%	6.9%	2.0%	7352
Boyacá	86.0%	5.6%	5.4%	2.6%	0.4%	6710
Bucaramanga	87.0%	4.9%	5.0%	2.5%	0.6%	3788
Buenaventura	69.2%	13.1%	10.6%	5.4%	1.6%	2443
Buga	82.9%	7.0%	4.7%	3.7%	1.7%	701
Caldas	79.3%	8.1%	7.9%	4.4%	0.4%	3576
Cali	80.5%	7.8%	7.2%	3.3%	1.2%	15344
Caquetá	72.0%	10.6%	9.0%	5.5%	2.9%	1554
Cartagena	73.5%	10.0%	9.5%	5.4%	1.5%	8279
Cartago	83.7%	6.4%	6.1%	3.0%	0.9%	1046
Casanare	85.5%	6.6%	4.9%	2.6%	0.5%	2175
Cauca	72.3%	11.7%	9.4%	5.4%	1.2%	7502
Cesar	73.6%	10.5%	9.4%	5.4%	1.2%	4685
Chocó	59.5%	16.2%	14.3%	8.1%	1.9%	1702
Chía	90.3%	3.9%	3.9%	1.5%	0.3%	1324
Ciénaga	62.2%	15.3%	12.5%	8.0%	2.1%	1055
Cundinamarca	86.3%	5.8%	5.0%	2.4%	0.5%	12605
Córdoba	67.2%	13.2%	11.9%	6.4%	1.3%	8936
Cúcuta	86.8%	5.2%	5.1%	2.3%	0.5%	5700
Dosquebradas	85.5%	6.4%	4.7%	3.0%	0.5%	1210
Duitama	89.5%	4.3%	4.4%	1.6%	0.1%	1081
Envigado	83.8%	6.8%	5.1%	3.0%	1.3%	1299
Facatativá	89.6%	3.9%	4.1%	1.7%	0.6%	972
Florencia	81.2%	7.6%	6.6%	3.6%	1.0%	1290
Floridablanca	89.0%	4.6%	3.7%	2.1%	0.5%	1735
Fusagasugá	86.4%	4.7%	4.6%	2.8%	1.5%	888
Girardot	82.6%	7.7%	6.2%	3.1%	0.4%	753
Girón	85.9%	6.7%	5.1%	2.4%	0.0%	1082

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Guainía	78.4%	8.9%	6.1%	6.6%	0.0%	213
Guaviare	70.8%	11.4%	11.3%	4.9%	1.6%	638
Huila	84.0%	6.2%	6.0%	3.2%	0.7%	4868
Ibagué	83.1%	7.1%	6.0%	3.1%	0.7%	4261
Ipiales	88.4%	5.3%	4.3%	1.7%	0.3%	887
Itagüí	75.6%	10.5%	7.7%	5.2%	1.0%	1396
Jamundí	78.0%	8.4%	7.7%	4.7%	1.3%	871
La Guajira	71.0%	11.5%	9.1%	7.3%	1.1%	2122
Lorica	64.4%	12.7%	13.3%	8.3%	1.4%	1137
Magangué	73.9%	10.3%	8.6%	6.5%	0.6%	938
Magdalena	69.2%	12.4%	11.3%	5.5%	1.6%	5494
Maicao	73.6%	10.9%	8.8%	5.5%	1.2%	1231
Malambo	73.7%	11.6%	8.4%	6.0%	0.3%	646
Manizales	84.2%	5.3%	6.9%	2.9%	0.8%	2358
Medellín	77.7%	8.6%	8.0%	4.1%	1.6%	14697
Meta	80.9%	8.1%	7.5%	2.6%	0.8%	3749
Montería	75.7%	9.7%	8.8%	4.6%	1.2%	3470
Mosquera	88.7%	4.6%	4.2%	2.0%	0.4%	1038
Nariño	79.1%	7.5%	7.6%	3.6%	2.2%	5699
Neiva	87.3%	5.5%	4.2%	1.9%	1.0%	2661
Norte de Santander	82.5%	7.3%	6.4%	3.1%	0.6%	4830
Palmira	85.0%	6.0%	5.1%	3.0%	0.9%	2076
Pasto	89.1%	4.4%	3.9%	2.0%	0.6%	2821
Pereira	82.2%	6.7%	6.3%	3.5%	1.3%	3216
Piedecuesta	83.8%	6.9%	5.1%	3.3%	0.9%	968
Pitalito	86.7%	5.8%	3.8%	2.7%	1.0%	1016
Popayán	84.0%	5.8%	5.8%	2.9%	1.4%	2141
Putumayo	79.3%	8.4%	7.8%	3.1%	1.4%	2546
Quibdó	66.1%	12.8%	11.9%	6.9%	2.3%	1070
Quindío	80.1%	8.5%	6.8%	3.6%	1.1%	1677
Riohacha	70.8%	11.3%	10.9%	5.7%	1.3%	1338
Rionegro	84.9%	5.6%	5.4%	3.0%	1.1%	908
Risaralda	77.4%	8.8%	7.8%	4.5%	1.6%	1802
Sabaneta	83.2%	6.1%	4.4%	1.5%	4.8%	475
Sahagún	77.0%	9.5%	8.5%	4.6%	0.3%	976
San Andrés	71.2%	11.4%	9.3%	6.9%	1.2%	420
Santa Marta	74.2%	10.0%	9.0%	5.3%	1.5%	4381
Santander	84.2%	6.7%	5.3%	2.9%	0.8%	5407
Sincelejo	79.4%	7.9%	7.8%	4.1%	0.7%	2437

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Soacha	83.6%	6.6%	6.4%	2.5%	0.9%	4454
Sogamoso	89.9%	3.6%	4.4%	2.0%	0.1%	1172
Soledad	76.5%	8.7%	9.0%	4.0%	1.8%	3696
Sucre	67.8%	12.9%	11.3%	6.7%	1.3%	5380
Tolima	76.0%	9.6%	8.4%	5.0%	1.0%	6450
Tuluá	79.8%	7.9%	7.8%	4.2%	0.3%	1636
Tumaco	64.9%	15.6%	10.8%	6.6%	2.0%	1292
Tunja	90.6%	3.8%	4.0%	1.3%	0.3%	1432
Turbo	70.5%	12.6%	10.4%	5.6%	0.8%	1310
Uribia	61.3%	16.6%	13.1%	7.3%	1.6%	313
Valle del Cauca	77.6%	8.9%	7.8%	4.5%	1.1%	5858
Valledupar	74.8%	10.4%	8.4%	4.9%	1.4%	3718
Vaupés	67.1%	15.4%	11.3%	5.8%	0.4%	240
Vichada	75.2%	7.7%	10.2%	5.8%	1.2%	431
Villavicencio	86.2%	6.1%	4.5%	2.3%	0.9%	3816
Yopal	87.6%	5.3%	5.1%	1.7%	0.3%	1380
Yumbo	81.4%	8.5%	7.1%	2.3%	0.8%	930
Zipaquirá	88.3%	5.0%	4.1%	2.3%	0.4%	1081
Colombia	79.6%	8.1%	7.4%	3.8%	1.1%	346976

*Es posible que los porcentajes mostrados no sumen exactamente 100 debido a aproximaciones decimales.

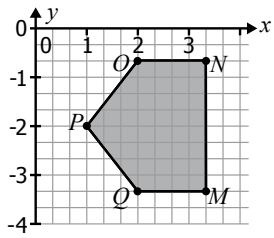
• Pregunta 3.

En un plano cartesiano, un polígono tiene coordenadas

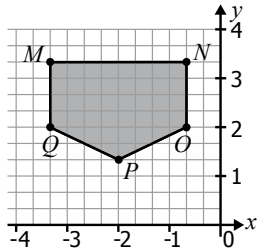
$$M\left(-\frac{10}{3},\frac{10}{3}\right),\ N\left(-\frac{2}{3},\frac{10}{3}\right),\ O\left(-\frac{2}{3},2\right),\ P\left(-2,\frac{4}{3}\right)\ \text{ y }\ Q\left(-\frac{10}{3},2\right)$$

La figura correspondiente es

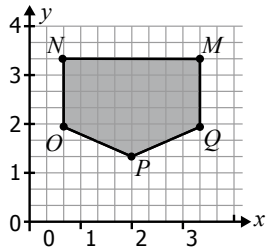
A.



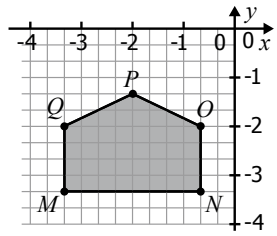
B.



C.



D.



• Estructura

Competencia	Comunicación
Componente	Espacial - métrico
Afirmación	Usar sistemas de referencia para localizar o describir posición de objetos y figuras.
Nivel de desempeño	Avanzado
Respuesta Correcta	B

• Resultados a nivel nacional y de Entidad Territorial certificada (ETC)

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Amazonas	14.1%	32.2%	28.2%	23.1%	2.4%	503
Antioquia	15.6%	32.6%	25.9%	23.8%	2.1%	15849
Apartadó	16.5%	32.8%	24.5%	23.1%	3.0%	959
Arauca	15.4%	34.0%	25.1%	24.4%	1.1%	1698
Armenia	15.3%	35.5%	25.9%	21.7%	1.6%	2085
Atlántico	15.6%	32.4%	26.4%	23.1%	2.5%	4927
Barrancabermeja	15.6%	35.6%	24.5%	21.3%	3.1%	1556
Barranquilla	16.8%	36.6%	23.9%	20.4%	2.3%	9859
Bello	16.5%	37.0%	24.1%	20.7%	1.7%	3012

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Bogotá, D.C.	16.9%	39.1%	21.1%	21.2%	1.6%	56273
Bolívar	14.3%	32.9%	25.9%	24.4%	2.5%	7352
Boyacá	15.2%	35.4%	25.6%	23.1%	0.7%	6710
Bucaramanga	16.4%	42.1%	20.7%	19.3%	1.6%	3788
Buenaventura	16.2%	28.9%	28.7%	24.1%	2.1%	2443
Buga	18.3%	35.5%	24.3%	20.3%	1.7%	701
Caldas	16.7%	34.1%	24.9%	23.3%	1.0%	3576
Cali	16.4%	38.1%	23.0%	20.3%	2.2%	15344
Caquetá	15.8%	34.8%	23.8%	22.1%	3.4%	1554
Cartagena	16.8%	35.2%	25.7%	20.4%	1.9%	8279
Cartago	17.3%	36.0%	23.4%	22.3%	1.0%	1046
Casanare	17.3%	33.1%	24.4%	24.4%	0.8%	2175
Cauca	14.7%	33.3%	25.4%	24.4%	2.1%	7502
Cesar	15.1%	31.5%	27.0%	24.8%	1.6%	4685
Chocó	15.5%	33.1%	25.3%	23.7%	2.4%	1702
Chía	15.9%	43.7%	19.6%	20.2%	0.6%	1324
Ciénaga	16.6%	30.0%	26.3%	24.7%	2.5%	1055
Cundinamarca	16.8%	35.1%	23.3%	23.5%	1.2%	12605
Córdoba	15.6%	31.1%	26.2%	25.4%	1.6%	8936
Cúcuta	16.8%	37.5%	23.6%	20.9%	1.2%	5700
Dosquebradas	14.1%	35.8%	24.2%	24.9%	1.0%	1210
Duitama	16.4%	43.8%	19.4%	20.0%	0.5%	1081
Envigado	16.1%	43.9%	21.0%	16.9%	2.2%	1299
Facatativá	15.2%	37.4%	24.8%	21.0%	1.5%	972
Florencia	15.7%	36.7%	23.3%	22.5%	1.9%	1290
Floridablanca	15.3%	44.0%	19.5%	19.9%	1.3%	1735
Fusagasugá	14.9%	40.1%	22.4%	20.7%	1.9%	888
Girardot	15.9%	34.1%	26.7%	22.2%	1.1%	753
Girón	16.2%	33.5%	25.7%	23.8%	0.8%	1082
Guainía	12.2%	37.1%	24.4%	24.4%	1.9%	213
Guaviare	15.2%	30.7%	29.2%	22.1%	2.8%	638
Huila	16.6%	34.0%	24.0%	24.2%	1.2%	4868
Ibagué	16.1%	33.4%	26.1%	22.9%	1.5%	4261
Ipiales	18.6%	41.0%	18.7%	20.3%	1.4%	887
Itagüí	17.6%	33.0%	24.0%	23.3%	2.1%	1396
Jamundí	16.6%	32.0%	25.1%	24.3%	1.8%	871
La Guajira	16.1%	31.3%	24.9%	26.1%	1.5%	2122
Lorica	16.0%	30.5%	28.1%	23.9%	1.5%	1137
Magangué	12.6%	32.2%	27.4%	26.3%	1.5%	938

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Magdalena	14.6%	32.9%	25.8%	24.6%	2.1%	5494
Maicao	15.8%	29.7%	27.1%	24.9%	2.4%	1231
Malambo	17.5%	37.5%	20.9%	22.8%	1.4%	646
Manizales	15.6%	34.0%	25.4%	24.0%	1.1%	2358
Medellín	16.9%	35.2%	24.6%	21.3%	2.1%	14697
Meta	15.3%	34.2%	24.3%	24.8%	1.4%	3749
Montería	16.3%	33.1%	27.2%	21.9%	1.5%	3470
Mosquera	17.2%	37.4%	21.1%	22.9%	1.3%	1038
Nariño	15.5%	35.9%	23.1%	22.6%	2.9%	5699
Neiva	16.3%	39.9%	21.2%	21.1%	1.6%	2661
Norte de Santander	16.5%	35.1%	25.0%	21.9%	1.5%	4830
Palmira	17.1%	37.1%	23.5%	20.3%	2.0%	2076
Pasto	16.7%	37.9%	22.1%	21.8%	1.5%	2821
Pereira	16.4%	34.6%	24.1%	22.9%	2.0%	3216
Piedecuesta	15.2%	36.0%	25.4%	21.7%	1.8%	968
Pitalito	15.8%	36.9%	22.0%	23.7%	1.5%	1016
Popayán	15.5%	35.0%	24.4%	22.6%	2.6%	2141
Putumayo	15.4%	35.8%	23.8%	23.1%	1.9%	2546
Quibdó	16.2%	29.2%	27.9%	23.9%	2.8%	1070
Quindío	16.6%	33.2%	25.3%	23.1%	1.7%	1677
Riohacha	15.9%	35.1%	24.1%	22.6%	2.3%	1338
Rionegro	15.9%	35.7%	23.7%	23.6%	1.2%	908
Risaralda	16.8%	30.6%	24.5%	26.1%	2.1%	1802
Sabaneta	16.0%	44.4%	17.1%	16.8%	5.7%	475
Sahagún	15.2%	30.7%	28.2%	24.8%	1.1%	976
San Andrés	14.5%	27.6%	31.9%	24.5%	1.4%	420
Santa Marta	15.9%	33.7%	25.3%	23.1%	2.1%	4381
Santander	15.7%	38.0%	23.1%	22.0%	1.2%	5407
Sincelejo	16.2%	34.9%	24.2%	23.3%	1.3%	2437
Soacha	16.0%	34.8%	23.9%	23.6%	1.7%	4454
Sogamoso	17.2%	40.0%	21.1%	21.2%	0.6%	1172
Soledad	15.0%	38.2%	23.2%	21.2%	2.4%	3696
Sucre	14.9%	31.7%	27.7%	24.1%	1.6%	5380
Tolima	15.0%	31.9%	26.2%	25.8%	1.0%	6450
Tuluá	14.5%	34.1%	25.9%	24.8%	0.7%	1636
Tumaco	14.1%	30.1%	28.3%	24.6%	2.9%	1292
Tunja	15.8%	46.6%	17.5%	19.6%	0.6%	1432
Turbo	16.0%	28.8%	28.9%	24.7%	1.6%	1310
Uribia	15.0%	25.6%	35.1%	22.0%	2.2%	313

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Valle del Cauca	16.8%	30.7%	27.6%	23.2%	1.7%	5858
Valledupar	15.8%	34.1%	25.1%	22.7%	2.2%	3718
Vaupés	17.9%	26.7%	27.9%	26.7%	0.8%	240
Vichada	14.8%	32.7%	25.3%	26.5%	0.7%	431
Villavicencio	15.5%	39.2%	22.7%	21.0%	1.7%	3816
Yopal	15.7%	39.3%	21.6%	22.9%	0.6%	1380
Yumbo	17.0%	33.0%	25.8%	22.2%	2.0%	930
Zipaquirá	16.9%	40.1%	20.9%	21.5%	0.6%	1081
Colombia	16.1%	35.5%	24.1%	22.5%	1.7%	346976

*Es posible que los porcentajes mostrados no sumen exactamente 100 debido a aproximaciones decimales.

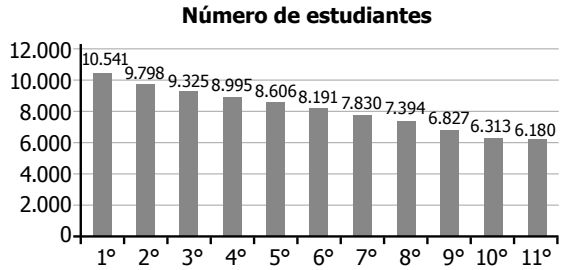
• Pregunta 4.

Un estudio sobre deserción escolar en una ciudad reúne datos sobre los 90.000 estudiantes de los colegios en ella. Se quiere comparar el número de personas en cada curso respecto al anterior, para ver cómo disminuye este valor.

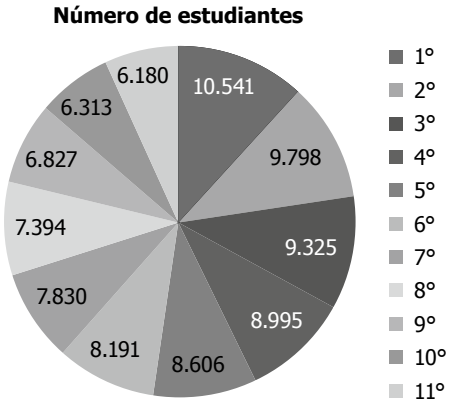
¿Cuál de las siguientes representaciones de los datos se adecua más para cumplir el objetivo del estudio?

A.

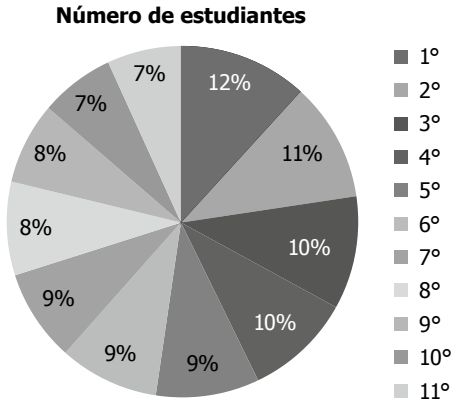
B.



C.



D.



• Estructura

Competencia	Comunicación
Componente	Aleatorio
Afirmación	Reconocer relaciones entre diferentes representaciones de un conjunto de datos y analizar la pertinencia de la representación.
Nivel de desempeño	Satisfactorio
Respuesta Correcta	B

- **Resultados a nivel nacional y de Entidad Territorial certificada (ETC)**

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Amazonas	18.7%	47.7%	14.7%	16.7%	2.2%	503
Antioquia	19.1%	46.4%	16.3%	16.3%	1.9%	15849
Apartadó	18.4%	43.6%	18.7%	16.7%	2.7%	959
Arauca	17.2%	48.4%	15.5%	17.6%	1.4%	1698
Armenia	15.0%	53.0%	16.0%	14.6%	1.4%	2085
Atlántico	20.3%	44.0%	16.6%	16.9%	2.2%	4927
Barrancabermeja	16.8%	51.7%	15.2%	13.4%	2.9%	1556
Barranquilla	18.6%	47.5%	16.3%	15.9%	1.8%	9859
Bello	16.2%	50.1%	17.1%	15.3%	1.3%	3012
Bogotá, D.C.	14.7%	53.8%	15.5%	14.5%	1.4%	56273
Bolívar	21.7%	40.6%	18.0%	17.5%	2.2%	7352
Boyacá	19.2%	46.9%	16.1%	16.9%	0.8%	6710
Bucaramanga	14.9%	56.0%	14.8%	13.3%	0.9%	3788
Buenaventura	22.4%	42.2%	17.0%	15.9%	2.5%	2443
Buga	15.8%	52.2%	13.8%	15.8%	2.3%	701
Caldas	17.0%	51.5%	16.0%	14.7%	0.8%	3576
Cali	17.1%	50.8%	16.0%	14.4%	1.8%	15344
Caquetá	20.4%	41.8%	17.1%	17.6%	3.0%	1554
Cartagena	20.2%	45.1%	17.3%	15.6%	1.8%	8279
Cartago	16.3%	48.9%	18.7%	14.7%	1.4%	1046
Casanare	17.7%	48.2%	17.5%	15.9%	0.7%	2175
Cauca	22.0%	43.3%	16.4%	16.3%	1.9%	7502
Cesar	20.9%	42.8%	16.6%	18.3%	1.5%	4685
Chocó	25.0%	38.3%	19.1%	15.5%	2.1%	1702
Chía	14.3%	59.4%	13.3%	12.5%	0.5%	1324
Ciénaga	23.6%	40.1%	17.7%	16.7%	1.9%	1055
Cundinamarca	16.4%	51.2%	15.9%	15.5%	0.9%	12605
Córdoba	22.1%	41.3%	17.7%	17.2%	1.6%	8936
Cúcuta	18.0%	50.6%	15.2%	15.4%	0.9%	5700
Dosquebradas	18.2%	49.5%	16.4%	14.5%	1.4%	1210
Duitama	14.2%	55.3%	16.6%	13.6%	0.3%	1081
Envigado	13.2%	58.9%	12.9%	13.1%	1.9%	1299
Facatativá	14.8%	54.2%	15.4%	14.6%	0.9%	972
Florencia	21.4%	45.0%	17.4%	15.0%	1.2%	1290
Floridablanca	13.3%	57.3%	15.0%	13.3%	1.1%	1735
Fusagasugá	13.6%	53.8%	15.1%	15.1%	2.4%	888
Girardot	16.9%	52.6%	15.5%	14.7%	0.3%	753
Girón	16.2%	50.2%	17.5%	15.4%	0.7%	1082

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Guainía	26.8%	40.4%	14.1%	17.8%	0.9%	213
Guaviare	17.6%	45.6%	16.8%	17.7%	2.4%	638
Huila	19.5%	47.6%	16.5%	15.2%	1.2%	4868
Ibagué	16.5%	50.6%	16.4%	15.3%	1.2%	4261
Ipiales	17.1%	52.1%	14.1%	15.1%	1.6%	887
Itagüí	16.6%	49.4%	15.1%	17.5%	1.4%	1396
Jamundí	17.8%	54.2%	13.3%	13.1%	1.6%	871
La Guajira	20.9%	43.8%	18.2%	16.0%	1.1%	2122
Lorica	24.5%	41.6%	16.5%	16.4%	1.1%	1137
Magangué	21.5%	43.0%	18.3%	16.0%	1.2%	938
Magdalena	22.4%	42.6%	17.2%	16.0%	1.9%	5494
Maicao	21.0%	39.4%	19.6%	18.4%	1.6%	1231
Malambo	18.4%	48.3%	14.6%	17.8%	0.9%	646
Manizales	16.4%	54.0%	15.0%	13.7%	1.0%	2358
Medellín	16.1%	50.4%	16.3%	15.2%	2.0%	14697
Meta	17.9%	48.8%	16.3%	16.0%	1.0%	3749
Montería	20.4%	46.3%	16.8%	15.2%	1.3%	3470
Mosquera	15.2%	52.7%	15.4%	15.4%	1.3%	1038
Nariño	21.9%	44.0%	15.7%	15.8%	2.6%	5699
Neiva	16.9%	49.3%	15.7%	16.4%	1.7%	2661
Norte de Santander	19.8%	47.0%	15.6%	16.3%	1.3%	4830
Palmira	16.6%	52.1%	16.8%	13.3%	1.3%	2076
Pasto	17.8%	51.2%	15.8%	14.2%	0.9%	2821
Pereira	17.0%	51.2%	15.3%	14.5%	1.9%	3216
Piedecuesta	14.3%	52.6%	15.8%	15.9%	1.4%	968
Pitalito	16.2%	51.3%	16.0%	15.4%	1.1%	1016
Popayán	16.8%	48.5%	17.4%	15.4%	1.9%	2141
Putumayo	19.3%	46.7%	16.1%	15.9%	2.0%	2546
Quibdó	21.6%	39.1%	20.5%	16.0%	2.9%	1070
Quindío	18.4%	48.0%	16.7%	15.4%	1.6%	1677
Riohacha	23.6%	42.3%	17.3%	15.0%	1.8%	1338
Rionegro	14.8%	51.4%	17.1%	15.7%	1.0%	908
Risaralda	17.4%	49.7%	16.0%	15.0%	1.9%	1802
Sabaneta	14.7%	54.9%	12.6%	12.6%	5.1%	475
Sahagún	19.8%	46.2%	15.1%	17.6%	1.3%	976
San Andrés	17.9%	47.4%	15.5%	17.9%	1.4%	420
Santa Marta	18.1%	46.8%	16.9%	16.3%	1.8%	4381
Santander	17.7%	49.5%	16.3%	15.3%	1.1%	5407
Sincelejo	18.8%	44.9%	18.2%	16.9%	1.3%	2437

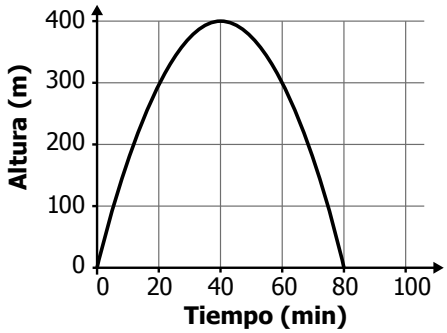
Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Soacha	17.2%	49.9%	16.3%	15.2%	1.4%	4454
Sogamoso	15.7%	53.0%	14.6%	15.7%	1.0%	1172
Soledad	17.4%	48.8%	15.6%	15.9%	2.3%	3696
Sucre	22.1%	44.0%	17.0%	15.5%	1.4%	5380
Tolima	19.7%	47.8%	16.2%	15.3%	1.1%	6450
Tuluá	16.7%	50.8%	16.6%	14.9%	1.0%	1636
Tumaco	20.8%	41.3%	15.5%	19.8%	2.6%	1292
Tunja	14.3%	57.6%	14.0%	13.2%	0.8%	1432
Turbo	24.2%	43.8%	17.3%	13.9%	0.8%	1310
Uribia	21.4%	36.1%	19.5%	21.7%	1.3%	313
Valle del Cauca	19.5%	47.0%	16.9%	15.1%	1.5%	5858
Valledupar	18.6%	44.4%	18.0%	16.8%	2.2%	3718
Vaupés	21.7%	45.0%	11.7%	20.8%	0.8%	240
Vichada	16.9%	45.5%	18.1%	18.8%	0.7%	431
Villavicencio	16.0%	52.2%	16.1%	14.4%	1.3%	3816
Yopal	16.3%	53.0%	15.9%	13.8%	0.9%	1380
Yumbo	16.9%	51.7%	16.3%	13.5%	1.5%	930
Zipaquirá	15.4%	52.9%	16.6%	14.4%	0.6%	1081
Colombia	18.0%	48.8%	16.3%	15.5%	1.5%	346976

*Es posible que los porcentajes mostrados no sumen exactamente 100 debido a aproximaciones decimales.

• Pregunta 5.

La gráfica muestra la altura de un globo respecto al tiempo de elevación.



Gráfica

En relación con el globo, es correcto afirmar que

A. alcanza la altura máxima en 400 min.
B. el tiempo que el globo dura volando es 40 min.
C. la altura máxima que alcanza es 40 m.
D. gasta 80 min en hacer todo su recorrido.

• Estructura

Competencia	Razonamiento
Componente	Numérico - variacional
Afirmación	Interpretar tendencias que se presentan en una situación de variación.
Nivel de desempeño	Satisfactorio
Respuesta Correcta	D

• Resultados a nivel nacional y de Entidad Territorial certificada (ETC)

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Amazonas	23.9%	12.3%	15.9%	45.9%	2.0%	503
Antioquia	22.4%	11.0%	10.9%	54.4%	1.3%	15849
Apartadó	26.4%	10.4%	11.1%	50.2%	2.0%	959
Arauca	19.8%	11.1%	9.0%	59.2%	0.8%	1698
Armenia	19.4%	12.7%	9.6%	57.4%	1.0%	2085
Atlántico	27.4%	11.6%	10.8%	48.6%	1.7%	4927

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Barrancabermeja	19.3%	10.8%	10.2%	57.6%	2.2%	1556
Barranquilla	19.7%	10.8%	10.4%	57.9%	1.2%	9859
Bello	18.2%	11.7%	11.0%	58.2%	0.9%	3012
Bogotá, D.C.	17.1%	11.1%	10.4%	60.4%	1.0%	56273
Bolívar	28.3%	12.3%	11.2%	46.7%	1.6%	7352
Boyacá	17.7%	11.2%	10.1%	60.6%	0.3%	6710
Bucaramanga	15.5%	11.4%	9.5%	63.2%	0.4%	3788
Buenaventura	27.2%	13.8%	12.7%	45.2%	1.0%	2443
Buga	17.4%	14.1%	11.0%	56.3%	1.1%	701
Caldas	20.8%	10.1%	10.9%	57.9%	0.4%	3576
Cali	19.2%	12.1%	10.7%	56.9%	1.2%	15344
Caquetá	21.9%	10.8%	10.3%	54.4%	2.6%	1554
Cartagena	27.1%	13.7%	10.0%	48.1%	1.2%	8279
Cartago	18.5%	9.8%	8.7%	62.2%	0.8%	1046
Casanare	18.5%	9.6%	11.4%	60.1%	0.4%	2175
Cauca	24.5%	12.1%	11.4%	51.0%	1.1%	7502
Cesar	24.9%	12.1%	10.6%	51.3%	1.1%	4685
Chocó	29.1%	12.0%	12.5%	44.6%	1.8%	1702
Chía	13.5%	9.8%	9.1%	67.3%	0.2%	1324
Ciénaga	30.4%	11.7%	12.7%	43.8%	1.4%	1055
Cundinamarca	17.8%	11.2%	10.3%	60.2%	0.4%	12605
Córdoba	28.5%	12.0%	11.1%	47.6%	0.9%	8936
Cúcuta	17.0%	10.9%	8.8%	62.8%	0.5%	5700
Dosquebradas	18.7%	10.7%	10.5%	59.8%	0.3%	1210
Duitama	11.0%	11.1%	9.8%	67.9%	0.2%	1081
Envigado	13.5%	8.3%	9.5%	67.3%	1.3%	1299
Facatativá	15.3%	13.3%	9.3%	61.4%	0.7%	972
Florencia	19.5%	10.7%	8.8%	60.0%	1.0%	1290
Floridablanca	13.8%	11.1%	9.0%	65.6%	0.5%	1735
Fusagasugá	15.9%	9.7%	11.0%	61.8%	1.6%	888
Girardot	21.2%	12.0%	11.2%	55.5%	0.1%	753
Girón	17.5%	12.7%	9.5%	60.2%	0.2%	1082
Guainía	21.6%	11.3%	11.3%	55.4%	0.5%	213
Guaviare	21.3%	11.4%	11.1%	54.7%	1.4%	638
Huila	19.6%	11.5%	10.5%	57.8%	0.6%	4868
Ibagué	18.7%	10.3%	9.6%	60.8%	0.5%	4261
Ipiales	14.5%	14.0%	11.0%	59.9%	0.6%	887
Itagüí	21.1%	14.2%	11.1%	52.8%	0.9%	1396
Jamundí	21.8%	13.5%	9.5%	53.8%	1.3%	871

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
La Guajira	26.7%	11.5%	11.2%	50.1%	0.6%	2122
Lorica	31.0%	12.2%	11.5%	44.5%	0.8%	1137
Magangué	28.9%	9.7%	10.6%	50.1%	0.7%	938
Magdalena	28.7%	11.2%	10.2%	48.7%	1.1%	5494
Maicao	23.4%	12.2%	12.8%	50.7%	0.9%	1231
Malambo	23.7%	9.3%	10.5%	56.2%	0.3%	646
Manizales	18.7%	11.5%	12.0%	57.0%	0.8%	2358
Medellín	20.2%	12.7%	11.0%	54.6%	1.4%	14697
Meta	20.1%	11.3%	11.4%	56.8%	0.5%	3749
Montería	25.7%	11.4%	10.6%	51.4%	0.8%	3470
Mosquera	12.9%	9.8%	9.7%	67.1%	0.4%	1038
Nariño	19.8%	12.0%	11.5%	54.7%	1.9%	5699
Neiva	16.5%	10.2%	10.4%	61.7%	1.1%	2661
Norte de Santander	20.6%	10.8%	10.2%	57.8%	0.6%	4830
Palmira	17.1%	11.0%	10.8%	60.2%	0.9%	2076
Pasto	16.4%	11.6%	10.9%	60.7%	0.5%	2821
Pereira	16.6%	11.4%	11.3%	59.6%	1.0%	3216
Piedecuesta	17.0%	11.1%	10.6%	60.6%	0.6%	968
Pitalito	17.2%	10.4%	10.2%	61.2%	0.9%	1016
Popayán	17.5%	13.2%	10.8%	57.3%	1.2%	2141
Putumayo	19.2%	12.5%	10.6%	56.5%	1.2%	2546
Quibdó	30.0%	14.4%	10.3%	43.3%	2.1%	1070
Quindío	18.7%	11.2%	11.4%	57.7%	1.1%	1677
Riohacha	24.3%	11.9%	11.1%	51.4%	1.3%	1338
Rionegro	19.3%	9.9%	9.3%	60.8%	0.8%	908
Risaralda	21.0%	11.5%	11.9%	54.2%	1.4%	1802
Sabaneta	13.5%	6.1%	6.5%	69.1%	4.8%	475
Sahagún	25.2%	10.8%	11.3%	52.4%	0.4%	976
San Andrés	27.9%	10.0%	7.1%	53.8%	1.2%	420
Santa Marta	23.3%	12.6%	9.6%	53.4%	1.2%	4381
Santander	17.4%	10.0%	10.2%	61.8%	0.7%	5407
Sincelejo	24.5%	12.6%	10.3%	52.0%	0.6%	2437
Soacha	21.3%	12.1%	11.6%	54.2%	0.8%	4454
Sogamoso	13.4%	11.7%	11.3%	63.3%	0.3%	1172
Soledad	21.0%	10.9%	9.8%	56.5%	1.6%	3696
Sucre	29.4%	11.6%	12.2%	46.0%	0.7%	5380
Tolima	22.7%	10.9%	11.5%	54.4%	0.6%	6450
Tuluá	19.7%	12.8%	10.2%	56.8%	0.5%	1636
Tumaco	29.8%	11.1%	10.8%	46.9%	1.4%	1292

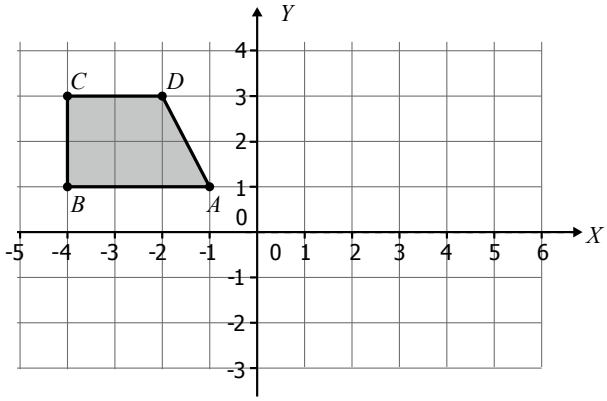
Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Tunja	12.4%	10.3%	9.0%	67.9%	0.3%	1432
Turbo	28.9%	12.7%	10.9%	47.1%	0.4%	1310
Uribia	25.2%	13.4%	14.4%	45.7%	1.3%	313
Valle del Cauca	22.1%	12.7%	10.9%	53.5%	0.9%	5858
Valledupar	24.4%	12.2%	10.9%	51.3%	1.2%	3718
Vaupés	26.3%	14.6%	15.0%	44.2%	0.0%	240
Vichada	23.0%	11.6%	12.1%	52.7%	0.7%	431
Villavicencio	17.9%	11.0%	9.3%	60.9%	0.9%	3816
Yopal	19.0%	11.2%	10.2%	59.3%	0.3%	1380
Yumbo	19.0%	13.5%	12.7%	54.0%	0.8%	930
Zipaquirá	18.1%	11.7%	9.9%	60.0%	0.2%	1081
Colombia	20.7%	11.5%	10.6%	56.2%	1.0%	346976

*Es posible que los porcentajes mostrados no sumen exactamente 100 debido a aproximaciones decimales.

• Pregunta 6.

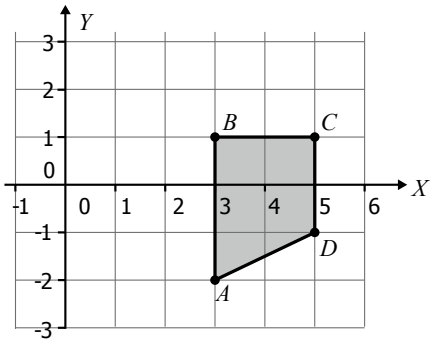
Se tiene un cuadrilátero en el plano cartesiano (ver figura).



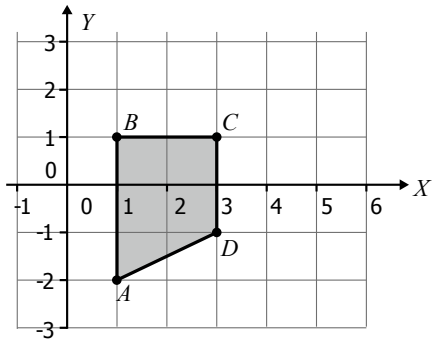
Figura

Al trasladar el cuadrilátero 5 unidades hacia la derecha y rotarlo 90° alrededor del punto B en el sentido que giran las manecillas del reloj, la nueva ubicación de la figura es

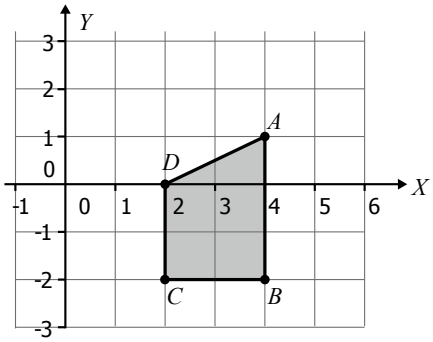
A.



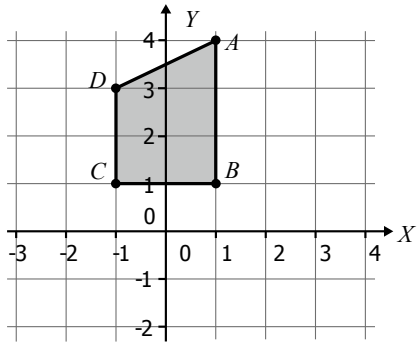
B.



C.



D.



• Estructura

Competencia	Comunicación
Componente	Espacial - métrico
Afirmación	Identificar y describir efectos de transformaciones aplicadas a figuras planas.
Nivel de desempeño	Avanzado
Respuesta Correcta	B

• Resultados a nivel nacional y de Entidad Territorial certificada (ETC)

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Amazonas	30.4%	28.6%	21.1%	17.7%	2.2%	503
Antioquia	31.4%	32.6%	20.3%	14.2%	1.4%	15849
Apartadó	27.0%	33.5%	23.9%	14.0%	1.7%	959
Arauca	32.3%	34.3%	19.1%	13.7%	0.6%	1698
Armenia	29.7%	36.6%	20.4%	12.4%	1.0%	2085
Atlántico	28.5%	32.1%	20.4%	17.2%	1.8%	4927
Barrancabermeja	29.7%	34.8%	20.0%	13.2%	2.2%	1556
Barranquilla	31.5%	36.4%	18.4%	12.4%	1.3%	9859
Bello	32.5%	36.9%	19.7%	10.0%	0.9%	3012
Bogotá, D.C.	29.2%	43.1%	16.6%	10.2%	1.0%	56273
Bolívar	28.7%	29.2%	23.1%	17.0%	2.0%	7352
Boyacá	31.3%	37.4%	19.4%	11.7%	0.3%	6710
Bucaramanga	29.9%	42.6%	17.5%	9.3%	0.6%	3788
Buenaventura	30.5%	29.7%	21.0%	17.4%	1.4%	2443
Buga	29.4%	35.8%	18.8%	14.7%	1.3%	701
Caldas	32.4%	34.4%	20.3%	12.6%	0.4%	3576
Cali	30.4%	38.0%	18.4%	12.1%	1.3%	15344
Caquetá	29.3%	31.3%	21.0%	15.7%	2.6%	1554
Cartagena	29.7%	33.2%	20.5%	15.3%	1.4%	8279
Cartago	29.1%	38.0%	19.1%	13.0%	0.8%	1046
Casanare	31.0%	37.0%	19.3%	12.6%	0.2%	2175
Cauca	30.5%	30.7%	21.2%	16.4%	1.3%	7502
Cesar	30.0%	31.2%	20.5%	17.1%	1.2%	4685
Chocó	24.3%	29.5%	22.7%	21.8%	1.6%	1702
Chía	28.7%	46.6%	15.4%	8.5%	0.8%	1324
Ciénaga	27.5%	27.7%	23.3%	19.2%	2.3%	1055
Cundinamarca	30.8%	39.3%	18.0%	11.4%	0.5%	12605
Córdoba	28.6%	30.0%	22.9%	17.4%	1.1%	8936

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Cúcuta	32.3%	36.6%	18.8%	11.7%	0.5%	5700
Dosquebradas	35.7%	36.4%	16.9%	10.7%	0.2%	1210
Duitama	27.4%	46.6%	17.2%	8.8%	0.0%	1081
Envigado	25.2%	49.0%	13.2%	11.5%	1.2%	1299
Facatativá	28.6%	42.9%	17.9%	9.9%	0.7%	972
Florencia	33.0%	31.2%	20.4%	14.0%	1.4%	1290
Floridablanca	26.6%	46.3%	16.9%	9.9%	0.4%	1735
Fusagasugá	28.4%	41.2%	18.1%	10.8%	1.5%	888
Girardot	32.0%	34.4%	19.9%	13.0%	0.7%	753
Girón	34.8%	33.1%	20.1%	11.9%	0.2%	1082
Guainía	33.8%	30.5%	18.8%	15.0%	1.9%	213
Guaviare	30.6%	31.8%	22.4%	13.8%	1.4%	638
Huila	34.3%	32.4%	19.8%	12.8%	0.7%	4868
Ibagué	30.1%	37.4%	19.9%	11.9%	0.7%	4261
Ipiales	31.1%	39.6%	17.9%	10.6%	0.8%	887
Itagüí	29.7%	35.8%	19.5%	13.8%	1.1%	1396
Jamundí	33.4%	33.4%	19.3%	12.9%	1.0%	871
La Guajira	27.9%	32.0%	19.9%	19.4%	0.8%	2122
Lorica	27.1%	28.3%	24.7%	19.2%	0.7%	1137
Magangué	32.0%	28.0%	20.5%	18.8%	0.7%	938
Magdalena	29.2%	29.5%	20.9%	19.0%	1.4%	5494
Maicao	28.4%	32.3%	21.3%	16.7%	1.3%	1231
Malambo	28.9%	34.4%	19.3%	16.7%	0.6%	646
Manizales	32.8%	34.8%	19.0%	12.6%	0.7%	2358
Medellín	31.0%	37.2%	19.2%	11.1%	1.4%	14697
Meta	31.0%	34.7%	20.6%	12.9%	0.7%	3749
Montería	30.3%	32.8%	21.5%	14.4%	1.0%	3470
Mosquera	30.1%	43.2%	16.1%	10.3%	0.4%	1038
Nariño	31.2%	33.2%	20.9%	12.6%	2.0%	5699
Neiva	30.4%	36.6%	19.0%	13.0%	1.0%	2661
Norte de Santander	32.9%	32.9%	20.3%	13.1%	0.8%	4830
Palmira	31.4%	40.0%	16.6%	11.0%	1.1%	2076
Pasto	33.3%	38.0%	17.2%	10.9%	0.6%	2821
Pereira	31.5%	37.8%	18.7%	10.9%	1.1%	3216
Piedecuesta	30.8%	37.8%	18.4%	12.2%	0.8%	968
Pitalito	34.5%	34.4%	18.5%	11.6%	0.9%	1016
Popayán	30.5%	37.3%	18.0%	12.9%	1.2%	2141
Putumayo	31.7%	32.6%	21.4%	12.8%	1.5%	2546
Quibdó	29.5%	27.1%	24.1%	17.1%	2.1%	1070

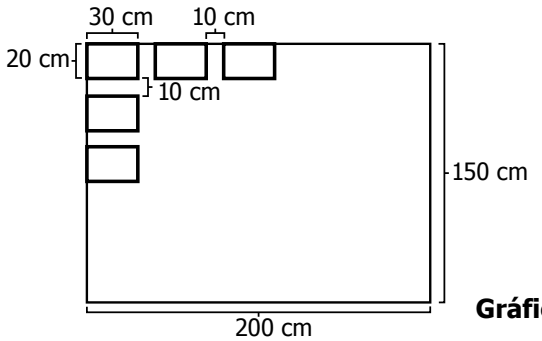
Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Quindío	32.4%	32.7%	21.8%	11.8%	1.3%	1677
Riohacha	30.9%	31.9%	21.4%	14.2%	1.5%	1338
Rionegro	34.8%	37.1%	19.4%	7.8%	0.9%	908
Risaralda	32.2%	32.6%	20.9%	12.7%	1.7%	1802
Sabaneta	29.3%	42.5%	12.6%	10.5%	5.1%	475
Sahagún	29.9%	33.1%	21.5%	14.9%	0.6%	976
San Andrés	29.5%	33.6%	21.2%	14.3%	1.4%	420
Santa Marta	31.4%	31.2%	20.4%	15.7%	1.3%	4381
Santander	31.5%	37.4%	19.6%	10.8%	0.7%	5407
Sincelejo	32.3%	31.6%	20.9%	14.2%	0.9%	2437
Soacha	31.8%	36.9%	19.1%	11.3%	0.9%	4454
Sogamoso	30.6%	42.4%	17.1%	9.7%	0.2%	1172
Soledad	30.6%	36.8%	19.1%	11.6%	1.9%	3696
Sucre	30.6%	28.7%	22.1%	17.7%	0.9%	5380
Tolima	31.0%	32.4%	21.6%	14.3%	0.7%	6450
Tuluá	31.8%	35.6%	18.7%	13.3%	0.5%	1636
Tumaco	27.6%	27.6%	21.8%	21.0%	2.0%	1292
Tunja	25.3%	50.7%	15.4%	8.2%	0.3%	1432
Turbo	29.8%	27.3%	22.9%	18.9%	1.1%	1310
Uribia	31.0%	26.8%	21.1%	19.8%	1.3%	313
Valle del Cauca	31.7%	32.3%	21.1%	13.7%	1.1%	5858
Valledupar	31.9%	32.8%	19.4%	14.5%	1.4%	3718
Vaupés	30.0%	25.8%	21.7%	22.5%	0.0%	240
Vichada	30.9%	31.1%	20.4%	16.5%	1.2%	431
Villavicencio	30.9%	40.9%	16.6%	10.8%	0.8%	3816
Yopal	30.6%	40.2%	18.6%	9.9%	0.7%	1380
Yumbo	33.0%	34.3%	17.0%	15.2%	0.5%	930
Zipaquirá	29.9%	43.5%	15.4%	11.1%	0.1%	1081
Colombia	30.5%	36.2%	19.3%	13.0%	1.1%	346976

*Es posible que los porcentajes mostrados no sumen exactamente 100 debido a aproximaciones decimales.

• Pregunta 7.

Se requiere cubrir una ventana de 150 cm de ancho por 200 cm de largo con vidrios de 20 cm de ancho por 30 cm de largo. Es necesario dejar separaciones de 10 cm entre vidrio y vidrio, como se observa en la gráfica.



Gráfica

La máxima cantidad de vidrios que se pueden ubicar en la ventana es:

A. 50 vidrios.
B. 35 vidrios.
C. 25 vidrios.
D. 7 vidrios.

• Estructura

Competencia	Resolución
Componente	Espacial - Métrico
Afirmación	Resolver y formular problemas geométricos o métricos que requieran seleccionar técnicas adecuadas de estimación y aproximación.
Nivel de desempeño	Satisfactorio
Respuesta Correcta	C

• Resultados a nivel nacional y de Entidad Territorial certificada (ETC)

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Amazonas	21.3%	18.9%	46.3%	10.7%	2.8%	503
Antioquia	16.0%	20.2%	52.7%	9.5%	1.6%	15849
Apartadó	20.0%	22.5%	46.3%	9.1%	2.1%	959
Arauca	14.3%	17.8%	58.6%	8.3%	1.1%	1698
Armenia	13.1%	21.2%	55.7%	8.7%	1.3%	2085
Atlántico	20.3%	21.5%	44.5%	11.5%	2.2%	4927

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Barrancabermeja	14.7%	20.5%	53.6%	8.7%	2.6%	1556
Barranquilla	16.6%	18.8%	54.7%	8.3%	1.6%	9859
Bello	14.8%	17.8%	59.3%	7.0%	1.1%	3012
Bogotá, D.C.	11.4%	18.6%	63.1%	5.7%	1.2%	56273
Bolívar	22.1%	20.6%	44.0%	11.2%	2.1%	7352
Boyacá	12.9%	18.3%	61.5%	6.9%	0.5%	6710
Bucaramanga	12.6%	16.5%	63.4%	6.8%	0.7%	3788
Buenaventura	22.4%	19.9%	44.2%	11.8%	1.6%	2443
Buga	15.1%	19.0%	56.5%	8.1%	1.3%	701
Caldas	14.3%	18.3%	57.4%	9.3%	0.6%	3576
Cali	14.8%	20.0%	56.1%	7.7%	1.5%	15344
Caquetá	16.3%	20.6%	48.5%	11.7%	2.8%	1554
Cartagena	18.7%	20.8%	48.5%	10.3%	1.6%	8279
Cartago	15.0%	17.5%	55.8%	10.8%	0.9%	1046
Casanare	13.4%	18.3%	59.6%	8.0%	0.6%	2175
Cauca	17.2%	19.1%	50.1%	12.2%	1.4%	7502
Cesar	19.1%	21.1%	47.0%	11.5%	1.3%	4685
Chocó	24.4%	19.2%	38.9%	15.6%	1.9%	1702
Chía	10.3%	17.9%	66.9%	4.5%	0.4%	1324
Ciénaga	20.8%	21.0%	42.6%	13.3%	2.4%	1055
Cundinamarca	12.1%	17.5%	62.8%	6.9%	0.6%	12605
Córdoba	20.9%	21.6%	44.5%	11.6%	1.4%	8936
Cúcuta	13.5%	16.2%	62.0%	7.5%	0.8%	5700
Dosquebradas	13.1%	17.9%	60.3%	8.1%	0.6%	1210
Duitama	10.6%	17.3%	67.2%	4.5%	0.4%	1081
Envigado	12.0%	17.9%	63.3%	5.4%	1.5%	1299
Facatativá	12.6%	15.3%	65.5%	5.9%	0.7%	972
Florencia	13.1%	18.7%	57.2%	9.7%	1.3%	1290
Floridablanca	11.9%	16.9%	64.9%	5.6%	0.6%	1735
Fusagasugá	11.5%	16.4%	63.1%	7.3%	1.7%	888
Girardot	16.3%	19.9%	54.6%	8.6%	0.5%	753
Girón	15.2%	19.1%	58.8%	6.4%	0.5%	1082
Guainía	23.0%	20.7%	44.6%	10.8%	0.9%	213
Guaviare	17.1%	19.3%	50.9%	10.7%	2.0%	638
Huila	14.9%	18.8%	57.4%	8.1%	0.7%	4868
Ibagué	14.0%	19.8%	57.3%	7.9%	0.9%	4261
Ipiales	15.6%	16.3%	62.1%	5.3%	0.7%	887
Itagüí	14.5%	22.4%	52.9%	8.8%	1.4%	1396
Jamundí	15.0%	20.2%	53.4%	9.8%	1.6%	871

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
La Guajira	20.7%	20.9%	46.2%	10.9%	1.3%	2122
Lorica	20.0%	22.0%	42.8%	13.7%	1.5%	1137
Magangué	19.4%	19.4%	45.5%	14.6%	1.1%	938
Magdalena	21.0%	22.3%	42.6%	12.0%	2.1%	5494
Maicao	21.3%	22.1%	43.0%	12.2%	1.5%	1231
Malambo	16.7%	20.1%	53.7%	8.4%	1.1%	646
Manizales	14.8%	19.3%	57.4%	7.6%	0.8%	2358
Medellín	14.5%	19.9%	55.8%	8.1%	1.7%	14697
Meta	13.8%	19.3%	57.7%	8.5%	0.7%	3749
Montería	19.0%	20.7%	48.5%	10.5%	1.4%	3470
Mosquera	10.3%	19.2%	63.9%	6.1%	0.6%	1038
Nariño	16.2%	17.9%	54.9%	8.8%	2.2%	5699
Neiva	13.5%	17.2%	61.5%	6.7%	1.2%	2661
Norte de Santander	15.0%	17.6%	58.4%	8.1%	0.9%	4830
Palmira	14.1%	18.6%	57.6%	8.4%	1.3%	2076
Pasto	12.5%	19.2%	61.1%	6.5%	0.6%	2821
Pereira	14.4%	18.6%	57.3%	8.4%	1.4%	3216
Piedecuesta	12.6%	17.7%	61.6%	7.1%	1.0%	968
Pitalito	12.1%	16.1%	62.5%	8.2%	1.1%	1016
Popayán	13.2%	18.6%	58.0%	8.6%	1.5%	2141
Putumayo	15.2%	19.0%	56.0%	8.2%	1.7%	2546
Quibdó	20.7%	20.7%	42.2%	13.7%	2.6%	1070
Quindío	13.0%	20.8%	56.1%	8.6%	1.5%	1677
Riohacha	18.2%	22.6%	47.4%	9.6%	2.2%	1338
Rionegro	13.0%	18.0%	62.6%	5.6%	0.9%	908
Risaralda	14.5%	20.0%	53.1%	10.4%	2.0%	1802
Sabaneta	11.4%	12.8%	65.3%	5.5%	5.1%	475
Sahagún	17.0%	21.8%	50.9%	9.1%	1.1%	976
San Andrés	18.8%	19.5%	47.1%	13.1%	1.4%	420
Santa Marta	15.9%	20.1%	50.9%	11.6%	1.5%	4381
Santander	14.1%	17.2%	59.7%	8.2%	0.9%	5407
Sincelejo	19.0%	20.5%	49.2%	10.1%	1.3%	2437
Soacha	13.2%	17.8%	61.9%	5.9%	1.2%	4454
Sogamoso	12.7%	17.9%	65.2%	3.9%	0.3%	1172
Soledad	16.4%	18.9%	53.9%	8.6%	2.2%	3696
Sucre	21.1%	21.3%	44.8%	11.7%	1.2%	5380
Tolima	17.7%	19.6%	51.3%	10.7%	0.8%	6450
Tuluá	15.4%	20.4%	54.6%	9.2%	0.5%	1636
Tumaco	22.1%	22.3%	40.9%	12.3%	2.4%	1292

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Tunja	8.9%	15.9%	70.3%	4.4%	0.5%	1432
Turbo	20.3%	20.9%	44.1%	13.9%	0.8%	1310
Uribia	25.6%	21.7%	37.7%	13.4%	1.6%	313
Valle del Cauca	16.7%	21.2%	51.6%	9.3%	1.2%	5858
Valledupar	17.8%	20.9%	50.2%	9.3%	1.8%	3718
Vaupés	25.8%	20.8%	40.4%	12.5%	0.4%	240
Vichada	16.9%	21.3%	46.6%	13.7%	1.4%	431
Villavicencio	12.1%	19.1%	61.5%	6.6%	0.8%	3816
Yopal	13.0%	18.2%	61.3%	7.0%	0.5%	1380
Yumbo	16.5%	20.9%	53.9%	8.3%	0.5%	930
Zipaquirá	11.0%	16.3%	68.5%	3.9%	0.3%	1081
Colombia	15.2%	19.3%	55.7%	8.5%	1.3%	346976

*Es posible que los porcentajes mostrados no sumen exactamente 100 debido a aproximaciones decimales.

• Pregunta 8.

En una baraja de póquer hay en total 52 cartas; 13 por cada símbolo (pica, corazón, diamante y trébol).

Pica ♠ **Corazón** ♥ **Diamante** ♦ **Trébol** ♣

Se sacaron de la baraja 10 cartas con los siguientes símbolos:

Símbolo	Cantidad
♠	3
♥	2
♦	4
♣	1
Total de cartas	10

Un experto del póquer comenta acertadamente que la próxima carta que se elija al azar de la baraja tendrá aproximadamente el 28% de probabilidad de tener el símbolo trébol. El experto dedujo tal probabilidad porque

A. ha salido solo un trébol y quedaron 12 de 42 cartas con trébol: $\frac{12}{42} \times 100\% \approx 28\%$.

B. cualquier trébol tiene el 25% de probabilidad de salir de la baraja de 52 cartas, y aumenta un 3% cuando sale una de estas.

C. cada trébol tiene cerca de 2,16% de salir y hay 13 cartas: $13 \times 2{,}16\% \approx 28\%$.

D. de las 52 cartas han salido 10, un trébol y nueve de 3 símbolos distintos: $\frac{9}{3} = 3\%$ sumado al 25% de probabilidad de salir trébol.

• Estructura

Competencia	Razonamiento
Componente	Aleatorio
Afirmación	Usar modelos para discutir acerca de la probabilidad de un evento Aleatorio.
Nivel de desempeño	Avanzado
Respuesta Correcta	A

- **Resultados a nivel nacional y de Entidad Territorial certificada (ETC)**

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Amazonas	27.6%	18.7%	15.3%	35.8%	2.6%	503
Antioquia	35.8%	16.6%	16.0%	29.9%	1.7%	15849
Apartadó	36.9%	16.8%	21.1%	23.1%	2.1%	959
Arauca	34.8%	17.3%	15.5%	31.5%	0.9%	1698
Armenia	40.1%	16.5%	16.2%	25.9%	1.3%	2085
Atlántico	33.3%	17.6%	18.1%	28.7%	2.2%	4927
Barrancabermeja	36.2%	17.9%	14.7%	28.4%	2.7%	1556
Barranquilla	39.6%	15.8%	16.2%	26.7%	1.7%	9859
Bello	38.8%	17.6%	14.5%	27.9%	1.2%	3012
Bogotá, D.C.	40.7%	15.4%	15.0%	27.5%	1.4%	56273
Bolívar	29.9%	19.8%	18.6%	29.8%	2.0%	7352
Boyacá	38.0%	16.9%	15.8%	28.7%	0.6%	6710
Bucaramanga	44.8%	14.0%	14.2%	25.8%	1.2%	3788
Buenaventura	32.4%	19.7%	16.6%	29.5%	1.9%	2443
Buga	38.2%	15.8%	15.1%	29.7%	1.1%	701
Caldas	37.6%	17.0%	14.7%	30.3%	0.5%	3576
Cali	40.0%	16.2%	15.4%	26.7%	1.7%	15344
Caquetá	32.1%	17.8%	16.7%	30.4%	3.0%	1554
Cartagena	35.9%	17.7%	18.5%	26.1%	1.8%	8279
Cartago	40.9%	14.5%	16.4%	26.8%	1.3%	1046
Casanare	36.0%	16.0%	16.7%	30.9%	0.4%	2175
Cauca	33.8%	19.1%	16.7%	28.6%	1.7%	7502
Cesar	35.4%	17.3%	17.1%	28.6%	1.6%	4685
Chocó	31.7%	19.3%	19.2%	27.8%	2.0%	1702
Chía	44.6%	13.8%	13.4%	27.5%	0.6%	1324
Ciénaga	29.2%	19.4%	19.3%	29.9%	2.2%	1055
Cundinamarca	38.7%	15.5%	15.4%	29.6%	0.8%	12605
Córdoba	32.3%	20.1%	18.1%	28.0%	1.4%	8936
Cúcuta	41.8%	15.1%	15.2%	27.1%	0.9%	5700
Dosquebradas	39.3%	17.3%	14.9%	28.1%	0.4%	1210
Duitama	42.9%	14.0%	16.3%	26.6%	0.2%	1081
Envigado	51.0%	11.9%	13.9%	21.6%	1.5%	1299
Facatativá	40.2%	14.1%	12.6%	32.1%	1.0%	972
Florencia	35.7%	16.6%	16.2%	30.2%	1.3%	1290
Floridablanca	44.1%	13.5%	16.2%	25.6%	0.6%	1735
Fusagasugá	42.5%	16.2%	14.2%	24.9%	2.3%	888
Girardot	32.5%	19.9%	17.1%	29.2%	1.2%	753
Girón	38.7%	16.1%	14.8%	30.0%	0.4%	1082

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Guainía	31.0%	19.2%	15.0%	33.3%	1.4%	213
Guaviare	31.5%	19.3%	17.6%	29.5%	2.2%	638
Huila	38.4%	15.8%	15.4%	29.5%	0.8%	4868
Ibagué	38.7%	15.4%	16.0%	29.0%	0.9%	4261
Ipiales	39.3%	16.9%	16.3%	26.5%	0.9%	887
Itagüí	36.8%	15.5%	18.4%	27.9%	1.3%	1396
Jamundí	35.5%	18.0%	17.9%	26.9%	1.7%	871
La Guajira	34.7%	19.0%	17.6%	27.4%	1.2%	2122
Lorica	32.5%	19.8%	19.8%	26.5%	1.5%	1137
Magangué	32.2%	19.4%	15.8%	31.4%	1.2%	938
Magdalena	30.3%	18.9%	17.5%	31.4%	2.0%	5494
Maicao	34.7%	19.4%	17.7%	26.4%	1.8%	1231
Malambo	41.6%	16.9%	13.6%	26.5%	1.4%	646
Manizales	39.6%	15.3%	16.0%	28.0%	1.1%	2358
Medellín	38.4%	16.3%	16.1%	27.4%	1.8%	14697
Meta	36.1%	18.0%	16.2%	28.8%	0.9%	3749
Montería	36.3%	17.5%	17.1%	27.9%	1.2%	3470
Mosquera	42.0%	16.3%	13.5%	27.5%	0.8%	1038
Nariño	36.6%	16.0%	15.5%	29.4%	2.5%	5699
Neiva	41.4%	15.0%	14.3%	27.9%	1.4%	2661
Norte de Santander	37.7%	16.3%	15.9%	29.1%	0.9%	4830
Palmira	39.7%	16.5%	15.4%	26.8%	1.5%	2076
Pasto	40.6%	14.5%	14.5%	29.6%	0.8%	2821
Pereira	39.1%	15.5%	15.7%	28.0%	1.6%	3216
Piedecuesta	41.2%	15.6%	14.0%	28.3%	0.8%	968
Pitalito	37.8%	15.3%	16.0%	29.8%	1.1%	1016
Popayán	37.7%	15.0%	15.2%	30.2%	1.8%	2141
Putumayo	34.6%	18.6%	15.5%	29.3%	1.9%	2546
Quibdó	31.8%	19.8%	17.0%	28.9%	2.5%	1070
Quindío	40.2%	15.1%	15.4%	27.7%	1.6%	1677
Riohacha	35.9%	18.0%	15.7%	28.5%	1.9%	1338
Rionegro	37.8%	15.3%	16.0%	29.6%	1.3%	908
Risaralda	37.4%	16.3%	16.1%	28.5%	1.7%	1802
Sabaneta	39.2%	13.9%	13.1%	28.2%	5.7%	475
Sahagún	32.9%	17.6%	19.5%	28.8%	1.2%	976
San Andrés	32.4%	17.9%	16.7%	31.4%	1.7%	420
Santa Marta	34.9%	17.4%	17.1%	28.8%	1.8%	4381
Santander	39.9%	15.8%	13.9%	29.5%	0.9%	5407
Sincelejo	36.7%	16.7%	17.1%	28.4%	1.2%	2437

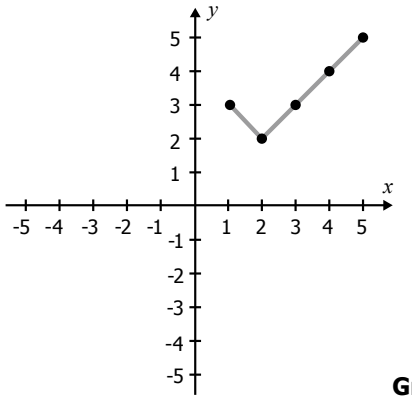
Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Soacha	37.1%	16.7%	15.6%	29.6%	1.0%	4454
Sogamoso	45.3%	14.0%	15.5%	24.8%	0.3%	1172
Soledad	38.7%	18.5%	15.4%	25.3%	2.1%	3696
Sucre	31.1%	18.7%	17.8%	31.4%	1.2%	5380
Tolima	34.4%	17.9%	16.6%	30.2%	0.9%	6450
Tuluá	39.0%	16.3%	14.3%	29.6%	0.9%	1636
Tumaco	27.9%	20.4%	19.3%	30.0%	2.2%	1292
Tunja	42.6%	14.6%	13.7%	28.4%	0.7%	1432
Turbo	33.0%	17.0%	17.7%	31.2%	1.1%	1310
Uribia	24.0%	23.3%	16.9%	34.2%	1.6%	313
Valle del Cauca	35.8%	17.6%	15.9%	29.4%	1.4%	5858
Valledupar	38.7%	16.4%	16.3%	26.9%	1.7%	3718
Vaupés	28.8%	15.8%	15.8%	38.8%	0.8%	240
Vichada	33.9%	20.2%	16.0%	29.0%	0.9%	431
Villavicencio	42.2%	15.9%	14.1%	26.6%	1.2%	3816
Yopal	41.7%	14.9%	14.3%	28.4%	0.7%	1380
Yumbo	36.1%	17.0%	18.6%	27.5%	0.8%	930
Zipaquirá	42.9%	15.2%	13.9%	27.5%	0.6%	1081
Colombia	37.6%	16.6%	16.0%	28.3%	1.4%	346976

*Es posible que los porcentajes mostrados no sumen exactamente 100 debido a aproximaciones decimales.

• Pregunta 9.

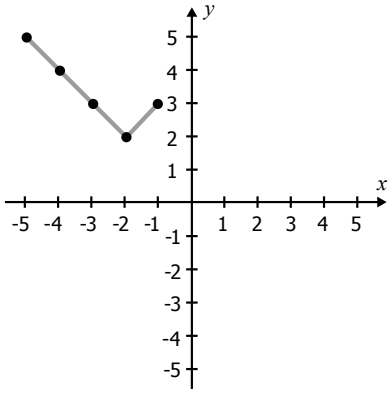
La gráfica representa la caminata de un perro buscando comida.



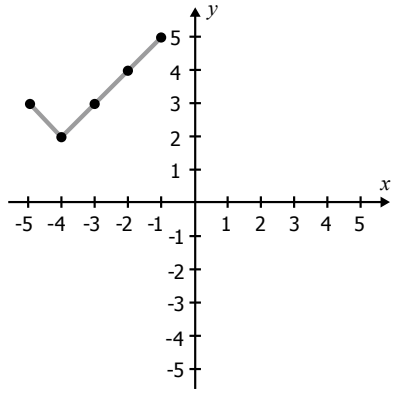
Gráfica

Si se sabe que antes de realizar este recorrido, realizó otro que corresponde exactamente al mostrado, pero reflejado respecto al eje y, la gráfica que representa el movimiento inicial del perro es

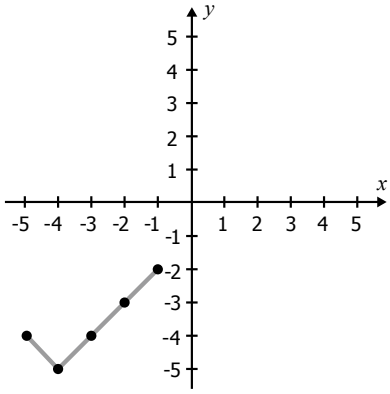
A.



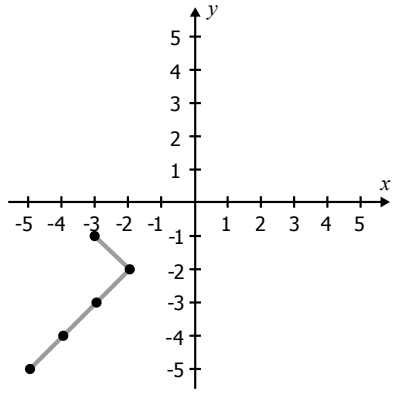
B.



C.



D.



• Estructura

Competencia	Comunicación
Componente	Espacial - métrico
Afirmación	Identificar y describir efectos de transformaciones aplicadas a figuras planas.
Nivel de desempeño	Satisfactorio
Respuesta Correcta	A

• Resultados a nivel nacional y de Entidad Territorial certificada (ETC)

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Amazonas	45.5%	28.6%	11.5%	11.3%	3.0%	503
Antioquia	50.9%	24.0%	12.0%	11.3%	1.8%	15849
Apartadó	47.1%	27.9%	11.6%	11.6%	1.8%	959
Arauca	54.3%	24.1%	10.8%	9.9%	0.9%	1698
Armenia	54.1%	23.1%	10.6%	11.2%	1.0%	2085
Atlántico	48.4%	25.1%	11.4%	12.8%	2.3%	4927
Barrancabermeja	53.7%	20.9%	10.3%	12.9%	2.1%	1556
Barranquilla	55.2%	21.0%	10.8%	11.6%	1.4%	9859
Bello	56.0%	19.9%	10.9%	12.1%	1.1%	3012
Bogotá, D.C.	59.1%	19.9%	10.0%	9.8%	1.2%	56273
Bolívar	48.0%	25.1%	12.3%	12.4%	2.2%	7352
Boyacá	58.0%	22.8%	9.1%	9.5%	0.6%	6710
Bucaramanga	61.4%	18.0%	9.3%	10.2%	1.0%	3788
Buenaventura	48.1%	25.7%	12.0%	12.6%	1.6%	2443
Buga	55.9%	20.3%	9.8%	12.7%	1.3%	701
Caldas	54.1%	23.9%	11.0%	10.3%	0.6%	3576
Cali	54.9%	21.8%	10.6%	11.1%	1.5%	15344
Caquetá	51.3%	24.8%	11.3%	9.8%	2.8%	1554
Cartagena	50.5%	23.0%	12.6%	12.3%	1.5%	8279
Cartago	53.0%	24.3%	10.1%	11.6%	1.1%	1046
Casanare	57.4%	22.7%	9.0%	10.3%	0.6%	2175
Cauca	51.7%	25.7%	11.2%	10.1%	1.4%	7502
Cesar	50.0%	23.9%	12.7%	12.0%	1.4%	4685
Chocó	43.8%	25.3%	15.2%	13.7%	1.9%	1702
Chía	62.0%	18.2%	9.7%	9.7%	0.5%	1324
Ciénaga	43.3%	26.8%	13.2%	14.1%	2.6%	1055
Cundinamarca	58.8%	21.0%	9.4%	10.2%	0.6%	12605
Córdoba	48.7%	24.8%	12.8%	12.4%	1.3%	8936

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Cúcuta	59.1%	20.5%	9.3%	10.4%	0.7%	5700
Dosquebradas	56.5%	20.9%	11.4%	10.4%	0.7%	1210
Duitama	64.8%	16.7%	9.0%	9.0%	0.6%	1081
Envigado	59.9%	18.3%	9.7%	10.8%	1.3%	1299
Facatativá	61.2%	21.5%	8.3%	8.0%	0.9%	972
Florencia	52.7%	24.3%	11.4%	10.3%	1.3%	1290
Floridablanca	63.2%	18.6%	8.1%	9.6%	0.5%	1735
Fusagasugá	61.9%	17.5%	8.8%	10.2%	1.6%	888
Girardot	55.5%	23.6%	10.8%	8.9%	1.2%	753
Girón	55.4%	22.6%	10.4%	11.1%	0.6%	1082
Guainía	56.8%	23.9%	12.7%	5.6%	0.9%	213
Guaviare	50.5%	26.6%	9.6%	11.1%	2.2%	638
Huila	58.1%	23.7%	8.7%	8.9%	0.7%	4868
Ibagué	56.4%	21.9%	10.4%	10.3%	1.0%	4261
Ipiales	61.3%	18.6%	8.9%	10.4%	0.8%	887
Itagüí	49.6%	21.4%	14.8%	12.7%	1.4%	1396
Jamundí	50.9%	23.9%	11.5%	12.3%	1.5%	871
La Guajira	50.1%	23.9%	12.7%	12.4%	0.8%	2122
Lorica	48.1%	24.9%	12.6%	13.3%	1.1%	1137
Magangué	46.1%	27.2%	12.7%	13.2%	0.9%	938
Magdalena	47.6%	27.0%	11.1%	12.5%	1.8%	5494
Maicao	51.4%	25.2%	11.9%	10.2%	1.3%	1231
Malambo	53.4%	21.8%	12.8%	11.6%	0.3%	646
Manizales	51.4%	24.7%	11.9%	11.2%	0.8%	2358
Medellín	52.4%	22.1%	11.8%	12.0%	1.7%	14697
Meta	54.4%	23.1%	11.1%	10.3%	1.0%	3749
Montería	51.0%	24.1%	11.6%	12.1%	1.2%	3470
Mosquera	60.3%	18.4%	11.1%	9.9%	0.3%	1038
Nariño	55.8%	21.6%	9.9%	10.6%	2.2%	5699
Neiva	58.9%	20.6%	9.5%	9.7%	1.3%	2661
Norte de Santander	55.3%	22.8%	10.5%	10.5%	0.9%	4830
Palmira	58.5%	20.0%	9.6%	10.7%	1.2%	2076
Pasto	60.9%	21.2%	8.4%	8.9%	0.7%	2821
Pereira	55.6%	22.5%	10.2%	10.2%	1.5%	3216
Piedecuesta	57.5%	20.4%	10.5%	10.7%	0.8%	968
Pitalito	56.8%	22.5%	9.6%	9.6%	1.4%	1016
Popayán	54.4%	22.8%	11.8%	9.4%	1.5%	2141
Putumayo	54.2%	23.2%	9.0%	9.5%	4.1%	2546
Quibdó	44.4%	25.1%	15.6%	12.1%	2.7%	1070

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Quindío	53.8%	22.4%	11.9%	10.4%	1.4%	1677
Riohacha	49.3%	22.0%	12.9%	13.9%	1.9%	1338
Rionegro	58.4%	19.7%	10.4%	10.5%	1.1%	908
Risaralda	50.9%	25.8%	10.9%	10.5%	1.8%	1802
Sabaneta	58.3%	18.7%	8.8%	8.6%	5.5%	475
Sahagún	49.7%	22.8%	14.9%	11.6%	1.0%	976
San Andrés	45.2%	22.1%	18.8%	12.6%	1.2%	420
Santa Marta	50.7%	25.3%	11.0%	11.4%	1.6%	4381
Santander	59.4%	21.0%	8.4%	10.4%	0.8%	5407
Sincelejo	55.2%	22.3%	11.6%	9.7%	1.2%	2437
Soacha	56.2%	22.7%	11.4%	8.7%	1.1%	4454
Sogamoso	59.6%	20.7%	10.4%	8.7%	0.5%	1172
Soledad	53.4%	22.6%	9.7%	12.3%	1.9%	3696
Sucre	50.4%	24.1%	12.0%	12.6%	0.9%	5380
Tolima	51.9%	26.0%	10.7%	10.7%	0.7%	6450
Tuluá	51.2%	25.1%	11.9%	11.0%	0.8%	1636
Tumaco	46.1%	25.8%	15.6%	11.0%	1.5%	1292
Tunja	63.2%	18.3%	9.4%	8.6%	0.5%	1432
Turbo	50.5%	24.4%	11.8%	12.7%	0.6%	1310
Uribia	45.4%	24.9%	13.7%	14.4%	1.6%	313
Valle del Cauca	51.4%	24.7%	11.4%	11.3%	1.2%	5858
Valledupar	51.0%	24.2%	10.8%	12.5%	1.5%	3718
Vaupés	52.1%	27.9%	10.8%	8.3%	0.8%	240
Vichada	53.4%	23.7%	10.7%	11.4%	0.9%	431
Villavicencio	57.7%	20.6%	10.6%	10.0%	1.1%	3816
Yopal	57.7%	20.9%	10.1%	10.5%	0.7%	1380
Yumbo	53.1%	24.1%	11.1%	11.0%	0.8%	930
Zipaquirá	61.1%	21.8%	8.8%	7.9%	0.5%	1081
Colombia	54.6%	22.4%	10.8%	10.9%	1.3%	346976

*Es posible que los porcentajes mostrados no sumen exactamente 100 debido a aproximaciones decimales.

• Pregunta 10.

En una promoción se ofrece un artículo por $119.990. Como la moneda de más baja denominación es $50, el almacén indica a sus vendedores las siguientes condiciones:

I. Si el cliente compra menos de 5 unidades, se le cobra cada artículo a $120.000.
II. Si el cliente compra 5 unidades o más, se le cobra cada unidad del artículo a $119.950.

Cada unidad del artículo comprada

A. cuesta $10 más con la condición I.
B. cuesta $10 menos con la condición II.
C. cuesta $40 menos con la condición I.
D. cuesta $40 más con la condición II.

• Estructura

Competencia	Razonamiento
Componente	Numérico - variacional
Afirmación	Utilizar propiedades y relaciones de los números reales para resolver problemas.
Nivel de desempeño	Avanzado
Respuesta Correcta	A

• Resultados a nivel nacional y de Entidad Territorial certificada (ETC)

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Amazonas	26.4%	36.2%	18.1%	17.1%	2.2%	503
Antioquia	34.4%	33.5%	16.6%	13.8%	1.6%	15849
Apartadó	34.1%	34.5%	16.0%	13.9%	1.6%	959
Arauca	37.2%	33.6%	15.6%	12.6%	1.0%	1698
Armenia	38.0%	32.7%	15.3%	12.9%	1.2%	2085
Atlántico	34.3%	31.0%	17.6%	15.2%	1.8%	4927
Barrancabermeja	36.9%	30.9%	16.2%	13.8%	2.2%	1556
Barranquilla	38.5%	29.9%	16.0%	13.7%	1.9%	9859
Bello	40.4%	30.3%	14.8%	13.4%	1.1%	3012
Bogotá, D.C.	39.5%	30.6%	15.5%	12.9%	1.4%	56273
Bolívar	31.7%	33.6%	17.0%	15.5%	2.1%	7352
Boyacá	36.1%	33.0%	16.8%	13.6%	0.4%	6710

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Bucaramanga	39.8%	30.4%	14.8%	14.0%	1.0%	3788
Buenaventura	30.9%	32.4%	17.3%	17.6%	1.8%	2443
Buga	36.8%	32.2%	16.0%	13.8%	1.1%	701
Caldas	35.0%	33.6%	17.4%	13.5%	0.5%	3576
Cali	38.9%	30.1%	16.2%	13.1%	1.7%	15344
Caquetá	31.9%	34.9%	16.1%	14.2%	2.8%	1554
Cartagena	36.5%	30.9%	16.4%	14.5%	1.7%	8279
Cartago	37.9%	30.7%	17.5%	13.1%	0.9%	1046
Casanare	34.2%	34.8%	15.7%	14.7%	0.7%	2175
Cauca	31.3%	34.2%	17.1%	16.0%	1.3%	7502
Cesar	35.6%	32.1%	17.2%	13.9%	1.3%	4685
Chocó	30.0%	34.2%	16.9%	17.2%	1.7%	1702
Chía	40.2%	33.1%	14.0%	12.2%	0.5%	1324
Ciénaga	33.5%	30.0%	19.4%	15.0%	2.2%	1055
Cundinamarca	36.8%	32.8%	16.0%	13.7%	0.8%	12605
Córdoba	32.4%	33.6%	17.9%	14.9%	1.2%	8936
Cúcuta	38.2%	30.6%	16.3%	14.1%	0.8%	5700
Dosquebradas	37.7%	34.0%	16.3%	11.7%	0.2%	1210
Duitama	39.9%	28.9%	16.8%	14.2%	0.3%	1081
Envigado	45.7%	27.3%	14.2%	11.0%	1.8%	1299
Facatativá	38.5%	32.1%	14.8%	13.9%	0.7%	972
Florencia	34.7%	35.0%	16.3%	13.0%	1.1%	1290
Floridablanca	42.0%	30.7%	13.4%	13.1%	0.8%	1735
Fusagasugá	37.0%	32.4%	13.4%	15.0%	2.1%	888
Girardot	39.3%	28.6%	18.7%	12.5%	0.9%	753
Girón	39.1%	30.7%	16.3%	13.4%	0.6%	1082
Guainía	27.7%	35.7%	17.8%	17.8%	0.9%	213
Guaviare	32.3%	36.1%	16.6%	13.5%	1.6%	638
Huila	33.2%	34.7%	16.9%	14.3%	0.9%	4868
Ibagué	38.2%	31.6%	16.8%	12.5%	0.9%	4261
Ipiales	38.3%	30.0%	16.7%	14.7%	0.3%	887
Itagüí	39.6%	31.8%	15.5%	12.2%	0.9%	1396
Jamundí	37.4%	31.1%	14.5%	15.0%	2.0%	871
La Guajira	31.3%	35.0%	17.0%	15.9%	0.9%	2122
Lorica	33.5%	34.3%	16.6%	14.3%	1.2%	1137
Magangué	30.5%	36.1%	17.8%	14.4%	1.2%	938
Magdalena	31.5%	33.3%	18.3%	15.4%	1.5%	5494
Maicao	34.8%	30.8%	17.6%	15.6%	1.2%	1231
Malambo	33.6%	29.6%	17.0%	18.4%	1.4%	646

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Manizales	36.9%	33.2%	16.3%	12.9%	0.8%	2358
Medellín	38.3%	31.4%	15.5%	13.1%	1.8%	14697
Meta	34.1%	33.7%	17.6%	13.8%	0.9%	3749
Montería	35.9%	32.3%	17.0%	13.7%	1.1%	3470
Mosquera	38.5%	34.0%	15.1%	11.8%	0.6%	1038
Nariño	34.1%	32.9%	15.9%	14.8%	2.3%	5699
Neiva	37.9%	29.7%	17.4%	13.4%	1.6%	2661
Norte de Santander	35.4%	32.7%	16.6%	14.3%	0.9%	4830
Palmira	37.8%	31.9%	15.2%	13.5%	1.6%	2076
Pasto	36.4%	33.0%	16.0%	13.7%	1.0%	2821
Pereira	37.2%	33.0%	15.8%	12.6%	1.5%	3216
Piedecuesta	37.9%	31.2%	16.4%	13.6%	0.8%	968
Pitalito	37.6%	31.7%	17.5%	12.3%	0.9%	1016
Popayán	36.0%	32.6%	17.7%	12.2%	1.6%	2141
Putumayo	30.8%	33.8%	17.0%	14.3%	4.2%	2546
Quibdó	32.1%	30.8%	18.8%	15.1%	3.2%	1070
Quindío	34.0%	31.7%	18.9%	14.1%	1.4%	1677
Riohacha	35.3%	31.2%	15.5%	16.2%	1.7%	1338
Rionegro	40.2%	30.8%	16.5%	11.2%	1.2%	908
Risaralda	34.8%	35.3%	15.0%	13.2%	1.7%	1802
Sabaneta	42.3%	28.2%	13.9%	10.3%	5.3%	475
Sahagún	34.8%	33.0%	16.8%	14.5%	0.8%	976
San Andrés	37.6%	30.2%	15.7%	15.0%	1.4%	420
Santa Marta	37.0%	30.9%	16.5%	14.1%	1.5%	4381
Santander	36.4%	33.1%	15.8%	13.9%	0.8%	5407
Sincelejo	35.3%	34.6%	16.2%	13.0%	0.9%	2437
Soacha	37.0%	31.3%	16.6%	14.1%	1.1%	4454
Sogamoso	39.0%	32.9%	15.9%	11.9%	0.3%	1172
Soledad	38.9%	29.7%	16.0%	13.7%	1.8%	3696
Sucre	30.6%	35.5%	17.2%	15.6%	1.0%	5380
Tolima	33.1%	33.9%	17.1%	15.1%	0.7%	6450
Tuluá	36.6%	33.2%	16.4%	12.8%	1.0%	1636
Tumaco	28.6%	31.3%	20.0%	18.3%	1.9%	1292
Tunja	40.8%	32.8%	15.1%	11.1%	0.3%	1432
Turbo	31.5%	35.8%	16.0%	15.9%	0.8%	1310
Uribia	24.3%	40.9%	16.3%	16.9%	1.6%	313
Valle del Cauca	36.6%	31.7%	17.3%	13.2%	1.2%	5858
Valledupar	37.1%	32.0%	15.8%	13.6%	1.6%	3718
Vaupés	21.7%	32.5%	25.4%	20.0%	0.4%	240

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Vichada	28.1%	36.9%	16.7%	17.6%	0.7%	431
Villavicencio	41.0%	30.7%	14.9%	12.4%	1.0%	3816
Yopal	39.0%	31.0%	15.9%	13.6%	0.4%	1380
Yumbo	35.2%	34.7%	18.5%	11.0%	0.6%	930
Zipaquirá	37.8%	32.4%	14.9%	14.2%	0.6%	1081
Colombia	36.4%	32.1%	16.3%	13.8%	1.3%	346976

*Es posible que los porcentajes mostrados no sumen exactamente 100 debido a aproximaciones decimales.

• Pregunta 11.

En clase de artes, un estudiante de noveno dibujó flechas como se muestra en las figuras 1, 2, 3, 4, 5 y 6. Todas las circunferencias tienen igual radio.

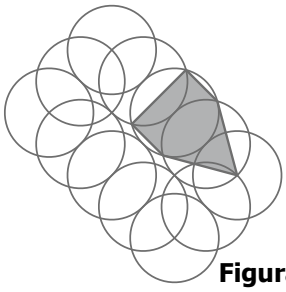


Figura 1

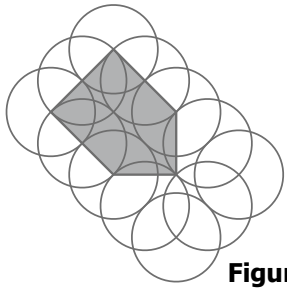


Figura 2

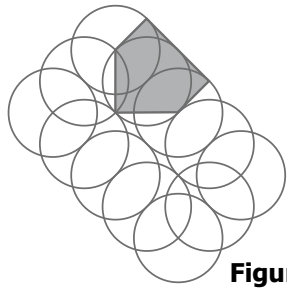


Figura 3

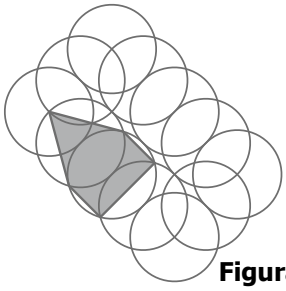


Figura 4

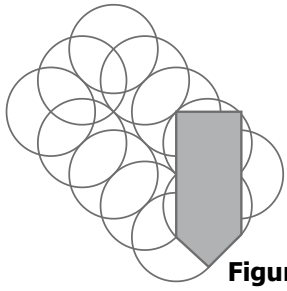


Figura 5

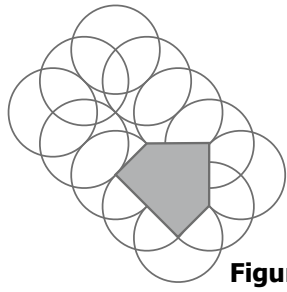


Figura 6

¿Cuáles flechas son congruentes entre sí?

A. Todas, pues tienen la misma forma y cinco lados rectos.

B. Las flechas 1 y 4, y las flechas 3 y 6, pues entre ellas tienen la misma forma e igual longitud entre sus lados correspondientes.

C. Las flechas 1 y 6, y las flechas 3 y 4, pues entre ellas tienen la misma forma e igual longitud entre sus lados correspondientes.

D. Ninguna flecha es congruente con otra, ya que todas tienen diferente dirección.

• Estructura

Competencia	Razonamiento
Componente	Espacial - métrico
Afirmación	Hacer conjeturas y verificar propiedades de congruencias y semejanzas entre figuras bidimensionales.
Nivel de desempeño	Satisfactorio
Respuesta Correcta	B

- **Resultados a nivel nacional y de Entidad Territorial certificada (ETC)**

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Amazonas	12.1%	41.0%	13.9%	30.8%	2.2%	503
Antioquia	11.8%	52.2%	11.6%	22.8%	1.6%	15849
Apartadó	13.0%	53.9%	12.9%	18.2%	1.9%	959
Arauca	11.0%	55.1%	10.5%	22.6%	0.8%	1698
Armenia	12.2%	55.2%	12.3%	19.1%	1.2%	2085
Atlántico	13.0%	53.2%	11.6%	20.4%	1.8%	4927
Barrancabermeja	11.6%	53.3%	11.8%	20.8%	2.5%	1556
Barranquilla	11.8%	59.5%	10.7%	16.5%	1.6%	9859
Bello	11.5%	59.8%	10.6%	17.3%	0.8%	3012
Bogotá, D.C.	10.9%	62.1%	9.5%	16.4%	1.1%	56273
Bolívar	12.5%	49.3%	13.2%	23.1%	1.9%	7352
Boyacá	10.7%	57.2%	9.9%	21.9%	0.4%	6710
Bucaramanga	10.6%	63.9%	9.0%	15.7%	0.8%	3788
Buenaventura	12.4%	50.8%	12.1%	23.4%	1.3%	2443
Buga	13.0%	53.2%	11.3%	21.0%	1.6%	701
Caldas	11.1%	53.1%	10.4%	24.9%	0.6%	3576
Cali	11.1%	59.0%	10.7%	17.7%	1.4%	15344
Caquetá	11.3%	48.2%	10.7%	27.0%	2.8%	1554
Cartagena	12.7%	55.4%	13.1%	17.3%	1.4%	8279
Cartago	11.2%	59.8%	10.6%	17.4%	1.0%	1046
Casanare	11.3%	55.7%	9.1%	23.2%	0.6%	2175
Cauca	10.9%	49.7%	11.3%	26.7%	1.4%	7502
Cesar	11.7%	52.3%	12.3%	22.4%	1.2%	4685
Chocó	12.7%	49.1%	12.4%	23.8%	1.9%	1702
Chía	9.4%	66.2%	9.3%	14.7%	0.5%	1324
Ciénaga	14.4%	47.8%	11.8%	23.8%	2.2%	1055
Cundinamarca	10.7%	59.4%	9.7%	19.6%	0.6%	12605
Córdoba	12.1%	50.9%	12.9%	22.8%	1.3%	8936
Cúcuta	11.9%	60.4%	9.5%	17.5%	0.6%	5700
Dosquebradas	11.9%	57.6%	9.8%	20.1%	0.6%	1210
Duitama	11.2%	65.5%	9.4%	13.9%	0.0%	1081
Envigado	9.6%	65.9%	9.5%	13.4%	1.5%	1299
Facatativá	10.2%	61.7%	8.1%	19.1%	0.8%	972
Florencia	10.9%	54.3%	9.8%	23.9%	1.2%	1290
Floridablanca	9.6%	64.9%	9.4%	15.8%	0.3%	1735
Fusagasugá	10.1%	60.4%	8.3%	19.4%	1.8%	888
Girardot	13.8%	54.1%	10.5%	20.8%	0.8%	753

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Girón	13.1%	59.1%	10.1%	17.6%	0.2%	1082
Guainía	11.7%	52.1%	8.9%	26.8%	0.5%	213
Guaviare	12.5%	52.8%	11.1%	21.6%	1.9%	638
Huila	11.3%	55.0%	9.5%	23.5%	0.7%	4868
Ibagué	11.4%	57.3%	9.8%	20.6%	0.9%	4261
Ipiales	10.0%	62.7%	8.0%	18.7%	0.6%	887
Itagüí	14.7%	52.8%	13.4%	18.2%	0.9%	1396
Jamundí	13.8%	54.5%	9.8%	20.1%	1.8%	871
La Guajira	12.5%	51.4%	12.3%	22.9%	0.9%	2122
Lorica	12.7%	50.6%	11.5%	23.9%	1.3%	1137
Magangué	11.4%	49.8%	11.8%	26.3%	0.6%	938
Magdalena	12.4%	52.0%	10.9%	23.1%	1.5%	5494
Maicao	10.7%	53.5%	14.1%	20.5%	1.3%	1231
Malambo	11.1%	59.3%	11.0%	18.1%	0.5%	646
Manizales	12.0%	56.7%	10.7%	19.9%	0.6%	2358
Medellín	12.9%	55.8%	11.6%	18.1%	1.6%	14697
Meta	11.1%	51.4%	12.9%	23.7%	0.8%	3749
Montería	13.3%	54.6%	12.7%	18.4%	1.1%	3470
Mosquera	9.7%	62.8%	9.2%	17.8%	0.4%	1038
Nariño	10.2%	55.4%	8.5%	23.8%	2.1%	5699
Neiva	11.0%	61.4%	8.4%	18.0%	1.2%	2661
Norte de Santander	11.4%	56.2%	10.4%	21.3%	0.7%	4830
Palmira	11.1%	59.7%	9.5%	18.4%	1.3%	2076
Pasto	9.8%	63.6%	8.2%	17.8%	0.6%	2821
Pereira	10.4%	57.3%	10.8%	20.3%	1.2%	3216
Piedecuesta	9.5%	59.8%	11.1%	18.7%	0.9%	968
Pitalito	12.0%	53.3%	11.1%	22.4%	1.1%	1016
Popayán	10.1%	56.5%	10.9%	21.2%	1.3%	2141
Putumayo	11.7%	53.1%	9.9%	21.3%	4.0%	2546
Quibdó	12.7%	49.2%	11.2%	23.7%	3.2%	1070
Quindío	13.8%	54.1%	10.7%	20.1%	1.3%	1677
Riohacha	13.0%	54.2%	10.6%	20.3%	1.9%	1338
Rionegro	11.8%	57.9%	10.2%	18.9%	1.1%	908
Risaralda	10.4%	51.1%	11.8%	25.1%	1.7%	1802
Sabaneta	11.4%	60.8%	8.4%	14.1%	5.3%	475
Sahagún	11.3%	57.6%	11.7%	18.4%	1.0%	976
San Andrés	11.2%	53.6%	15.5%	17.9%	1.9%	420
Santa Marta	13.1%	53.0%	11.2%	21.2%	1.4%	4381
Santander	10.1%	59.1%	9.0%	21.2%	0.7%	5407

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Sincelejo	12.9%	59.3%	10.5%	16.3%	0.9%	2437
Soacha	11.3%	59.1%	10.2%	18.3%	1.1%	4454
Sogamoso	11.9%	65.4%	8.0%	14.7%	0.1%	1172
Soledad	12.7%	59.3%	11.4%	14.9%	1.7%	3696
Sucre	13.8%	50.3%	11.7%	23.2%	1.0%	5380
Tolima	12.4%	50.6%	11.2%	25.1%	0.7%	6450
Tuluá	11.6%	55.7%	11.2%	20.7%	0.8%	1636
Tumaco	10.8%	45.0%	12.4%	29.8%	2.0%	1292
Tunja	9.5%	64.5%	9.1%	16.3%	0.6%	1432
Turbo	12.0%	47.8%	13.4%	26.1%	0.7%	1310
Uribia	7.7%	42.8%	18.5%	29.1%	1.9%	313
Valle del Cauca	12.8%	51.2%	11.5%	23.4%	1.1%	5858
Valledupar	12.5%	56.9%	12.0%	17.1%	1.5%	3718
Vaupés	10.0%	45.0%	10.0%	35.0%	0.0%	240
Vichada	13.5%	43.2%	7.0%	35.5%	0.9%	431
Villavicencio	10.0%	60.0%	10.2%	19.0%	0.8%	3816
Yopal	12.4%	57.5%	8.8%	21.0%	0.3%	1380
Yumbo	9.7%	56.0%	10.5%	23.0%	0.8%	930
Zipaquirá	8.9%	64.8%	9.0%	16.9%	0.5%	1081
Colombia	11.6%	56.6%	10.7%	19.9%	1.2%	346976

*Es posible que los porcentajes mostrados no sumen exactamente 100 debido a aproximaciones decimales.

• Pregunta 12.

En la tabla están los puntos obtenidos por los competidores en un campeonato. Solamente los que tengan un puntaje superior al promedio de puntos competirán en una carrera que define al campeón.

Nacionalidad del competidor	Puntos
Español	18
Francés	16
Australiano	14
Alemán	11
Estadounidense	15
Brasileño	10

Tabla. Puntos de pilotos

La nacionalidad de los pilotos que competirán en la carrera final son

A. español, francés y estadounidense solamente.
B. alemán, brasileño y australiano solamente.
C. español y francés solamente.
D. alemán y brasileño solamente.

• Estructura

Competencia	Resolución
Componente	Aleatorio
Afirmación	Resolver problemas que requieran el uso e interpretación de medidas de tendencia central para analizar el comportamiento de un conjunto de datos.
Nivel de desempeño	Mínimo
Respuesta Correcta	A

• Resultados a nivel nacional y de Entidad Territorial certificada (ETC)

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Amazonas	55.1%	8.5%	28.4%	5.6%	2.4%	503
Antioquia	55.3%	8.4%	27.8%	6.6%	1.8%	15849
Apartadó	51.9%	11.3%	27.6%	7.6%	1.6%	959
Arauca	57.1%	6.7%	29.7%	5.7%	0.9%	1698
Armenia	53.6%	9.2%	29.7%	5.8%	1.7%	2085
Atlántico	52.5%	9.6%	28.2%	7.7%	2.0%	4927
Barrancabermeja	54.0%	9.3%	29.0%	4.7%	3.0%	1556
Barranquilla	56.3%	8.1%	27.7%	6.2%	1.7%	9859

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Bello	57.0%	8.3%	27.6%	6.1%	1.0%	3012
Bogotá, D.C.	58.7%	6.7%	28.4%	4.8%	1.4%	56273
Bolívar	51.7%	9.8%	28.1%	8.2%	2.2%	7352
Boyacá	57.9%	6.9%	29.6%	4.9%	0.7%	6710
Bucaramanga	59.3%	6.7%	28.2%	4.9%	0.9%	3788
Buenaventura	53.7%	8.1%	29.0%	7.5%	1.7%	2443
Buga	59.3%	7.0%	25.7%	6.4%	1.6%	701
Caldas	56.4%	6.3%	31.5%	5.1%	0.7%	3576
Cali	57.3%	7.5%	27.6%	6.0%	1.6%	15344
Caquetá	51.3%	8.6%	30.5%	6.6%	3.1%	1554
Cartagena	53.8%	10.0%	26.4%	8.0%	1.7%	8279
Cartago	61.2%	6.2%	26.8%	4.8%	1.1%	1046
Casanare	57.5%	7.5%	29.0%	5.2%	0.8%	2175
Cauca	54.3%	7.4%	30.3%	6.5%	1.5%	7502
Cesar	55.4%	8.0%	27.7%	7.6%	1.3%	4685
Chocó	50.1%	10.1%	28.4%	9.2%	2.2%	1702
Chía	63.2%	4.9%	27.8%	3.5%	0.6%	1324
Ciénaga	49.9%	11.2%	29.3%	7.6%	2.1%	1055
Cundinamarca	58.1%	6.5%	29.9%	4.8%	0.8%	12605
Córdoba	54.2%	9.4%	27.5%	7.4%	1.4%	8936
Cúcuta	60.6%	6.3%	27.6%	4.9%	0.6%	5700
Dosquebradas	58.1%	7.6%	28.1%	5.2%	1.0%	1210
Duitama	63.6%	5.4%	26.7%	4.2%	0.2%	1081
Envigado	60.9%	5.4%	26.6%	5.7%	1.5%	1299
Facatativá	62.0%	5.5%	28.5%	3.4%	0.6%	972
Florencia	56.6%	7.1%	31.0%	4.0%	1.3%	1290
Floridablanca	62.7%	5.8%	26.7%	4.4%	0.3%	1735
Fusagasugá	55.7%	6.9%	29.7%	5.6%	2.0%	888
Girardot	52.3%	9.3%	32.4%	4.9%	1.1%	753
Girón	60.9%	5.7%	27.7%	5.3%	0.4%	1082
Guainía	57.3%	7.5%	30.5%	3.8%	0.9%	213
Guaviare	50.2%	9.1%	31.2%	7.8%	1.7%	638
Huila	56.9%	7.5%	30.2%	4.6%	0.9%	4868
Ibagué	56.3%	7.7%	29.5%	5.5%	1.0%	4261
Ipiales	60.5%	6.3%	27.6%	4.5%	1.0%	887
Itagüí	51.6%	10.2%	27.5%	9.7%	1.0%	1396
Jamundí	56.7%	8.3%	27.6%	5.5%	2.0%	871
La Guajira	53.5%	8.9%	27.9%	8.6%	1.1%	2122
Lorica	52.5%	10.1%	26.6%	9.1%	1.6%	1137

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Magangué	55.7%	6.4%	31.0%	5.8%	1.2%	938
Magdalena	53.0%	8.0%	30.0%	7.4%	1.6%	5494
Maicao	55.6%	8.0%	27.8%	6.7%	1.8%	1231
Malambo	59.3%	8.8%	25.9%	5.1%	0.9%	646
Manizales	60.2%	6.5%	28.2%	4.2%	0.8%	2358
Medellín	55.1%	8.7%	26.8%	7.6%	1.9%	14697
Meta	55.1%	9.0%	28.3%	6.9%	0.7%	3749
Montería	55.8%	8.5%	27.3%	7.3%	1.2%	3470
Mosquera	60.6%	5.9%	29.3%	3.4%	0.9%	1038
Nariño	57.6%	6.8%	28.2%	5.0%	2.4%	5699
Neiva	59.1%	6.5%	28.8%	4.2%	1.4%	2661
Norte de Santander	56.9%	6.7%	29.6%	6.0%	0.8%	4830
Palmira	59.6%	7.3%	27.0%	4.5%	1.6%	2076
Pasto	58.8%	7.0%	29.0%	4.5%	0.7%	2821
Pereira	58.4%	7.1%	28.8%	4.3%	1.4%	3216
Piedecuesta	55.8%	7.0%	30.5%	5.8%	0.9%	968
Pitalito	56.9%	6.4%	31.6%	4.0%	1.1%	1016
Popayán	58.1%	6.5%	27.8%	6.0%	1.6%	2141
Putumayo	51.7%	7.2%	30.8%	6.2%	4.2%	2546
Quibdó	53.7%	9.2%	24.4%	8.7%	4.0%	1070
Quindío	56.5%	6.4%	29.6%	5.7%	1.8%	1677
Riohacha	56.9%	7.4%	26.2%	7.8%	1.6%	1338
Rionegro	61.3%	6.5%	26.3%	4.6%	1.2%	908
Risaralda	55.5%	8.0%	28.9%	5.8%	1.8%	1802
Sabaneta	61.1%	4.6%	24.8%	4.2%	5.3%	475
Sahagún	55.9%	8.5%	27.6%	7.4%	0.6%	976
San Andrés	53.1%	11.4%	24.8%	8.8%	1.9%	420
Santa Marta	54.6%	8.8%	28.5%	6.7%	1.4%	4381
Santander	57.6%	6.4%	30.0%	5.0%	1.0%	5407
Sincelejo	59.1%	7.3%	26.0%	6.4%	1.2%	2437
Soacha	55.8%	6.8%	30.4%	5.7%	1.2%	4454
Sogamoso	61.9%	6.2%	27.3%	4.1%	0.4%	1172
Soledad	56.4%	9.0%	25.2%	7.7%	1.7%	3696
Sucre	53.8%	9.6%	27.9%	7.7%	1.0%	5380
Tolima	55.7%	7.6%	30.2%	5.7%	0.9%	6450
Tuluá	59.5%	6.7%	28.0%	5.2%	0.6%	1636
Tumaco	49.1%	10.6%	30.0%	7.9%	2.3%	1292
Tunja	59.8%	5.5%	30.2%	3.8%	0.6%	1432
Turbo	54.1%	9.8%	27.8%	7.8%	0.5%	1310

Continúa en la siguiente página

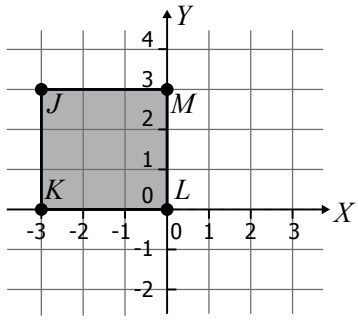
ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Uribia	41.9%	10.9%	38.0%	7.7%	1.6%	313
Valle del Cauca	56.1%	8.1%	28.4%	6.1%	1.3%	5858
Valledupar	54.7%	8.0%	28.1%	7.8%	1.5%	3718
Vaupés	50.4%	4.6%	42.9%	2.1%	0.0%	240
Vichada	57.8%	7.2%	29.7%	4.4%	0.9%	431
Villavicencio	56.9%	6.8%	30.1%	5.3%	0.9%	3816
Yopal	61.7%	6.5%	25.9%	5.4%	0.4%	1380
Yumbo	60.6%	6.2%	26.7%	5.4%	1.1%	930
Zipaquirá	59.5%	5.3%	30.2%	4.6%	0.5%	1081
Colombia	56.6%	7.7%	28.4%	6.0%	1.4%	346976

*Es posible que los porcentajes mostrados no sumen exactamente 100 debido a aproximaciones decimales.

• Pregunta 13.

Si al cuadrado $JKLM$ de la figura se le realiza una rotación de 360º respecto al punto L, entonces:

I. Las longitudes de los segmentos se mantienen.
II. Las coordenadas de los puntos se mantienen.



Figura

De las posibilidades anteriores,

A. solamente I se cumple.
B. solamente II se cumple.
C. I y II se cumplen.
D. ni I, ni II se cumplen.

• Estructura

Competencia	Razonamiento
Componente	Espacial - métrico
Afirmación	Predecir y explicar los efectos de aplicar transformaciones rígidas sobre figuras bidimensionales.
Nivel de desempeño	Avanzado
Respuesta Correcta	C

• Resultados a nivel nacional y de Entidad Territorial certificada (ETC)

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Amazonas	19.3%	21.9%	44.7%	11.9%	2.2%	503
Antioquia	26.1%	21.1%	39.0%	12.2%	1.6%	15849
Apartadó	26.2%	21.1%	39.5%	11.3%	2.0%	959
Arauca	24.5%	20.6%	42.2%	12.0%	0.6%	1698

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Armenia	30.6%	20.8%	37.2%	10.5%	1.0%	2085
Atlántico	26.2%	22.8%	37.5%	11.8%	1.8%	4927
Barrancabermeja	29.8%	19.2%	38.4%	10.5%	2.1%	1556
Barranquilla	30.4%	19.9%	37.5%	10.7%	1.5%	9859
Bello	29.1%	17.5%	43.0%	9.7%	0.8%	3012
Bogotá, D.C.	29.4%	16.7%	44.5%	8.2%	1.3%	56273
Bolívar	23.8%	24.0%	37.1%	13.0%	2.1%	7352
Boyacá	27.5%	19.3%	41.7%	11.1%	0.4%	6710
Bucaramanga	31.0%	14.8%	45.2%	8.2%	0.8%	3788
Buenaventura	24.9%	23.4%	35.5%	14.4%	1.7%	2443
Buga	27.2%	20.1%	43.4%	8.1%	1.1%	701
Caldas	24.8%	19.7%	42.7%	12.2%	0.7%	3576
Cali	28.6%	18.7%	41.8%	9.3%	1.6%	15344
Caquetá	23.0%	23.4%	36.6%	14.3%	2.8%	1554
Cartagena	28.9%	21.6%	37.5%	10.6%	1.4%	8279
Cartago	29.2%	19.0%	41.0%	9.9%	0.9%	1046
Casanare	25.8%	19.9%	42.3%	11.5%	0.6%	2175
Cauca	23.1%	23.6%	39.9%	12.1%	1.3%	7502
Cesar	24.7%	22.1%	39.0%	13.1%	1.0%	4685
Chocó	25.1%	24.0%	34.3%	14.7%	1.9%	1702
Chía	30.1%	12.0%	50.6%	6.8%	0.5%	1324
Ciénaga	24.3%	25.4%	34.3%	14.1%	1.9%	1055
Cundinamarca	28.6%	17.3%	44.0%	9.4%	0.7%	12605
Córdoba	24.8%	23.5%	38.1%	12.4%	1.2%	8936
Cúcuta	29.7%	17.8%	42.0%	9.8%	0.6%	5700
Dosquebradas	27.8%	17.9%	41.5%	11.8%	1.0%	1210
Duitama	31.5%	13.9%	48.6%	6.0%	0.1%	1081
Envigado	31.8%	12.9%	48.2%	5.8%	1.4%	1299
Facatativá	27.6%	15.8%	47.6%	8.1%	0.8%	972
Florencia	22.2%	19.9%	44.6%	11.9%	1.3%	1290
Floridablanca	32.7%	12.9%	45.5%	8.5%	0.5%	1735
Fusagasugá	30.7%	14.3%	44.0%	9.2%	1.7%	888
Girardot	23.5%	26.0%	41.7%	8.1%	0.7%	753
Girón	28.3%	20.1%	39.9%	11.3%	0.4%	1082
Guainía	23.0%	21.1%	43.7%	11.3%	0.9%	213
Guaviare	25.2%	22.4%	40.3%	10.2%	1.9%	638
Huila	25.6%	19.2%	41.7%	12.7%	0.8%	4868
Ibagué	28.3%	18.6%	41.7%	10.7%	0.8%	4261
Ipiales	31.7%	16.1%	43.5%	8.3%	0.3%	887

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Itagüí	35.5%	18.1%	34.7%	10.7%	1.0%	1396
Jamundí	30.9%	21.1%	37.1%	9.1%	1.8%	871
La Guajira	23.8%	23.5%	38.5%	13.2%	1.0%	2122
Lorica	24.1%	23.7%	37.5%	13.1%	1.6%	1137
Magangué	25.2%	24.0%	38.0%	11.8%	1.1%	938
Magdalena	24.0%	24.9%	36.3%	13.3%	1.5%	5494
Maicao	26.2%	23.2%	38.6%	10.8%	1.2%	1231
Malambo	26.5%	19.7%	39.0%	13.9%	0.9%	646
Manizales	27.4%	18.0%	44.1%	9.7%	0.8%	2358
Medellín	30.4%	18.7%	39.1%	10.1%	1.7%	14697
Meta	26.0%	22.5%	39.4%	11.4%	0.9%	3749
Montería	28.3%	21.3%	38.6%	10.5%	1.3%	3470
Mosquera	31.3%	16.4%	41.8%	9.5%	1.0%	1038
Nariño	25.4%	19.6%	41.4%	11.3%	2.3%	5699
Neiva	28.1%	18.5%	43.6%	8.6%	1.1%	2661
Norte de Santander	27.4%	18.9%	41.4%	11.5%	0.8%	4830
Palmira	31.1%	17.3%	40.7%	9.6%	1.3%	2076
Pasto	32.1%	16.6%	41.1%	9.6%	0.6%	2821
Pereira	28.4%	18.7%	41.3%	10.2%	1.4%	3216
Piedecuesta	30.2%	17.7%	42.0%	9.0%	1.1%	968
Pitalito	28.0%	19.4%	39.8%	12.1%	0.8%	1016
Popayán	28.1%	18.5%	39.9%	12.1%	1.4%	2141
Putumayo	25.8%	19.5%	38.2%	12.4%	4.0%	2546
Quibdó	23.0%	23.2%	36.7%	14.0%	3.1%	1070
Quindío	25.3%	19.4%	42.8%	11.1%	1.4%	1677
Riohacha	24.4%	20.0%	40.1%	13.8%	1.6%	1338
Rionegro	29.3%	15.3%	45.6%	8.7%	1.1%	908
Risaralda	25.9%	21.6%	38.5%	12.3%	1.7%	1802
Sabaneta	29.7%	16.4%	40.0%	8.6%	5.3%	475
Sahagún	23.7%	21.9%	41.8%	12.0%	0.6%	976
San Andrés	31.9%	19.3%	36.2%	11.0%	1.7%	420
Santa Marta	27.5%	21.6%	36.5%	12.9%	1.5%	4381
Santander	26.6%	18.4%	43.6%	10.7%	0.7%	5407
Sincelejo	28.8%	21.8%	38.4%	10.0%	1.0%	2437
Soacha	28.6%	20.0%	42.3%	8.0%	1.0%	4454
Sogamoso	32.2%	17.0%	44.0%	6.6%	0.3%	1172
Soledad	27.6%	19.2%	41.1%	10.5%	1.6%	3696
Sucre	24.2%	22.5%	39.5%	12.7%	1.1%	5380
Tolima	24.7%	22.6%	39.8%	12.2%	0.6%	6450

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Tuluá	25.5%	19.1%	42.3%	12.5%	0.6%	1636
Tumaco	24.6%	23.0%	34.4%	16.3%	1.7%	1292
Tunja	33.3%	14.9%	43.9%	7.3%	0.5%	1432
Turbo	24.5%	25.2%	36.0%	13.4%	0.8%	1310
Uribia	16.9%	24.3%	43.8%	13.4%	1.6%	313
Valle del Cauca	26.6%	22.1%	39.1%	11.0%	1.2%	5858
Valledupar	27.5%	21.9%	37.6%	11.6%	1.3%	3718
Vaupés	22.5%	18.8%	45.8%	12.5%	0.4%	240
Vichada	19.5%	24.8%	41.5%	13.2%	0.9%	431
Villavicencio	27.9%	17.9%	44.1%	9.2%	0.9%	3816
Yopal	26.6%	19.2%	43.4%	10.4%	0.4%	1380
Yumbo	26.3%	20.1%	42.0%	10.5%	1.0%	930
Zipaquirá	30.1%	13.9%	45.9%	9.7%	0.5%	1081
Colombia	27.6%	19.6%	41.0%	10.6%	1.3%	346976

*Es posible que los porcentajes mostrados no sumen exactamente 100 debido a aproximaciones decimales.

• Pregunta 14.

La gráfica muestra la aproximación al comportamiento del precio de la acción de una compañía, desde las doce del día hasta las 10 de la noche.

Gráfica

Del precio de la acción ese día, es correcto afirmar que

A. fue constante entre las 2 y las 4 de la tarde.

B. entre las 8 y las 10 de la noche alcanzó su valor máximo.

C. entre las 2 y las 3 el precio siempre disminuyó.

D. entre las 4 y 6 de la tarde el precio siempre subió.

• Estructura

Competencia	Comunicación
Componente	Numérico - variacional
Afirmación	Identificar características de gráficas cartesianas en relación con la situación que representan.
Nivel de desempeño	Avanzado
Respuesta Correcta	C

- **Resultados a nivel nacional y de Entidad Territorial certificada (ETC)**

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Amazonas	16.7%	24.1%	23.1%	33.4%	2.8%	503
Antioquia	17.1%	18.5%	28.3%	34.1%	1.9%	15849
Apartadó	19.4%	17.9%	28.8%	31.4%	2.5%	959
Arauca	15.0%	15.9%	31.6%	36.4%	1.1%	1698
Armenia	16.8%	14.7%	35.1%	32.0%	1.3%	2085
Atlántico	18.4%	21.4%	26.2%	31.7%	2.2%	4927
Barrancabermeja	18.7%	14.4%	35.5%	28.9%	2.6%	1556
Barranquilla	17.9%	15.0%	31.7%	33.6%	1.8%	9859
Bello	17.6%	15.7%	32.3%	33.4%	1.0%	3012
Bogotá, D.C.	14.6%	12.4%	37.3%	34.0%	1.7%	56273
Bolívar	19.4%	22.9%	24.9%	30.3%	2.5%	7352
Boyacá	15.6%	13.6%	34.2%	36.0%	0.6%	6710
Bucaramanga	14.9%	11.4%	40.5%	32.2%	1.1%	3788
Buenaventura	18.9%	22.8%	22.0%	33.3%	3.0%	2443
Buga	18.8%	13.7%	31.8%	34.2%	1.4%	701
Caldas	17.6%	17.0%	28.7%	35.6%	1.0%	3576
Cali	16.3%	14.4%	33.6%	33.8%	1.9%	15344
Caquetá	16.5%	20.3%	26.8%	33.4%	3.0%	1554
Cartagena	19.3%	19.7%	28.5%	30.7%	1.8%	8279
Cartago	17.5%	13.6%	33.7%	33.9%	1.3%	1046
Casanare	14.9%	15.4%	33.1%	35.6%	1.0%	2175
Cauca	17.9%	20.3%	25.8%	34.2%	1.8%	7502
Cesar	18.8%	20.2%	27.1%	32.3%	1.5%	4685
Chocó	18.7%	23.1%	24.6%	31.6%	1.9%	1702
Chía	11.9%	9.4%	48.0%	30.4%	0.5%	1324
Ciénaga	20.3%	24.0%	22.6%	30.2%	2.9%	1055
Cundinamarca	15.0%	13.0%	35.7%	35.2%	1.1%	12605
Córdoba	19.3%	22.0%	25.2%	31.8%	1.7%	8936
Cúcuta	17.1%	13.2%	35.2%	33.8%	0.8%	5700
Dosquebradas	15.2%	11.3%	34.7%	37.8%	1.0%	1210
Duitama	14.1%	9.8%	44.6%	31.1%	0.5%	1081
Envigado	13.2%	10.2%	45.7%	29.3%	1.7%	1299
Facatativá	15.4%	9.3%	38.0%	36.1%	1.2%	972
Florencia	16.7%	15.3%	29.8%	36.5%	1.7%	1290
Floridablanca	14.1%	9.8%	43.7%	31.6%	0.9%	1735
Fusagasugá	13.5%	10.5%	36.5%	37.4%	2.1%	888
Girardot	18.9%	15.3%	30.1%	34.8%	0.9%	753
Girón	17.2%	13.4%	32.2%	36.7%	0.6%	1082

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Guainía	15.5%	24.9%	25.4%	33.3%	0.9%	213
Guaviare	17.6%	17.1%	27.3%	35.9%	2.2%	638
Huila	16.7%	15.7%	31.0%	35.6%	1.0%	4868
Ibagué	16.8%	14.3%	32.0%	36.0%	0.9%	4261
Ipiales	15.2%	14.3%	36.0%	33.5%	1.0%	887
Itagüí	17.0%	16.8%	33.5%	31.4%	1.4%	1396
Jamundí	16.0%	14.6%	31.8%	35.7%	2.0%	871
La Guajira	19.5%	22.8%	25.6%	30.7%	1.5%	2122
Lorica	21.7%	23.6%	23.9%	28.9%	1.8%	1137
Magangué	19.2%	20.3%	25.7%	33.8%	1.1%	938
Magdalena	18.9%	23.9%	23.4%	31.9%	2.0%	5494
Maicao	18.9%	20.5%	26.6%	32.2%	1.9%	1231
Malambo	13.9%	17.6%	35.8%	31.0%	1.7%	646
Manizales	16.6%	14.0%	31.6%	36.9%	1.0%	2358
Medellín	16.7%	15.3%	32.6%	33.4%	2.1%	14697
Meta	17.6%	15.2%	32.2%	33.7%	1.3%	3749
Montería	18.7%	18.0%	28.0%	33.9%	1.4%	3470
Mosquera	14.2%	9.2%	39.1%	36.3%	1.2%	1038
Nariño	17.3%	15.7%	30.7%	33.6%	2.7%	5699
Neiva	14.6%	13.5%	35.1%	35.4%	1.5%	2661
Norte de Santander	18.1%	15.9%	31.1%	34.1%	0.8%	4830
Palmira	14.9%	12.9%	33.5%	36.9%	1.8%	2076
Pasto	16.1%	12.8%	36.8%	33.3%	1.0%	2821
Pereira	16.5%	14.7%	32.0%	35.0%	1.7%	3216
Piedecuesta	16.8%	12.4%	36.6%	33.3%	0.9%	968
Pitalito	14.1%	13.7%	34.2%	36.8%	1.3%	1016
Popayán	15.7%	13.5%	32.9%	36.4%	1.5%	2141
Putumayo	17.6%	17.0%	29.0%	31.8%	4.6%	2546
Quibdó	20.5%	23.5%	21.9%	29.9%	4.3%	1070
Quindío	17.1%	14.7%	30.8%	35.8%	1.7%	1677
Riohacha	21.0%	18.3%	27.4%	31.2%	2.0%	1338
Rionegro	15.9%	13.4%	40.5%	29.1%	1.1%	908
Risaralda	17.8%	16.3%	29.1%	34.7%	2.2%	1802
Sabaneta	13.7%	10.9%	36.4%	33.5%	5.5%	475
Sahagún	17.9%	19.3%	27.0%	35.0%	0.7%	976
San Andrés	20.2%	19.3%	26.7%	31.2%	2.6%	420
Santa Marta	18.4%	17.0%	28.6%	34.2%	1.8%	4381
Santander	16.1%	13.4%	35.1%	34.4%	1.0%	5407
Sincelejo	20.1%	17.9%	28.3%	32.3%	1.4%	2437

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Soacha	16.3%	15.6%	31.5%	35.6%	1.1%	4454
Sogamoso	14.7%	12.1%	38.2%	34.5%	0.5%	1172
Soledad	19.6%	16.7%	31.0%	30.5%	2.2%	3696
Sucre	18.9%	22.8%	23.6%	33.5%	1.3%	5380
Tolima	17.8%	17.7%	27.4%	36.0%	1.1%	6450
Tuluá	17.7%	15.4%	30.8%	35.2%	0.9%	1636
Tumaco	19.6%	26.6%	20.9%	30.3%	2.6%	1292
Tunja	13.8%	10.1%	42.0%	33.3%	0.8%	1432
Turbo	19.0%	24.0%	21.0%	34.8%	1.1%	1310
Uribia	14.7%	32.6%	16.0%	34.2%	2.6%	313
Valle del Cauca	17.7%	17.8%	27.7%	35.0%	1.7%	5858
Valledupar	18.7%	17.6%	27.9%	33.9%	1.8%	3718
Vaupés	16.3%	23.8%	20.8%	37.1%	2.1%	240
Vichada	15.5%	20.6%	27.4%	35.5%	0.9%	431
Villavicencio	14.7%	13.7%	36.7%	33.8%	1.1%	3816
Yopal	14.9%	14.3%	37.0%	32.8%	0.9%	1380
Yumbo	16.3%	17.0%	29.4%	36.6%	0.8%	930
Zipaquirá	15.1%	10.5%	37.2%	36.7%	0.5%	1081
Colombia	16.8%	16.0%	31.9%	33.7%	1.6%	346976

*Es posible que los porcentajes mostrados no sumen exactamente 100 debido a aproximaciones decimales.

• Pregunta 15.

Dos cursos de noveno grado (901 y 902) participan en un concurso de reciclaje, cuyo reto consiste en recolectar la mayor cantidad de kilogramos de periódico. El curso 901 no ha comenzado a recolectar aún periódico; mientras que el curso 902 ya tiene 30 kg recolectados. A partir de este momento, los estudiantes de 901 deciden recolectar 6 kg cada día, al notar que a partir de ahora, los de 902 recogerán 4 kg diariamente.

¿Cuántos kilogramos de periódico ha recolectado cada curso el día en que ambos cursos alcanzan la misma cantidad de periódico?

A. 30 kilogramos.
B. 45 kilogramos.
C. 54 kilogramos.
D. 90 kilogramos.

• Estructura

Competencia	Resolución
Componente	Numérico - variacional
Afirmación	Resolver problemas en situaciones de variación con funciones polinómicas y exponenciales en contextos aritméticos y geométricos.
Nivel de desempeño	Avanzado
Respuesta Correcta	D

• Resultados a nivel nacional y de Entidad Territorial certificada (ETC)

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Amazonas	27.4%	31.4%	21.1%	17.3%	2.8%	503
Antioquia	22.2%	27.3%	24.4%	24.3%	1.8%	15849
Apartadó	26.5%	26.1%	23.1%	22.2%	2.1%	959
Arauca	22.3%	27.6%	24.6%	24.4%	1.1%	1698
Armenia	23.1%	27.8%	25.9%	21.7%	1.5%	2085
Atlántico	27.0%	28.3%	20.6%	22.0%	2.1%	4927
Barrancabermeja	22.8%	25.9%	23.1%	25.6%	2.6%	1556
Barranquilla	23.0%	25.4%	23.5%	26.1%	2.0%	9859
Bello	22.0%	26.0%	24.5%	26.4%	1.2%	3012
Bogotá, D.C.	16.9%	24.9%	28.9%	27.5%	1.8%	56273
Bolívar	27.8%	28.8%	20.0%	21.2%	2.3%	7352
Boyacá	20.0%	27.6%	26.2%	25.6%	0.6%	6710

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Bucaramanga	18.3%	23.7%	27.7%	29.3%	1.0%	3788
Buenaventura	29.5%	28.4%	19.5%	20.3%	2.3%	2443
Buga	22.5%	25.2%	26.7%	24.3%	1.3%	701
Caldas	21.2%	26.3%	27.7%	24.0%	0.8%	3576
Cali	21.4%	26.3%	25.0%	25.3%	1.9%	15344
Caquetá	24.1%	29.2%	22.3%	21.5%	2.9%	1554
Cartagena	27.3%	27.4%	21.3%	22.5%	1.4%	8279
Cartago	20.9%	24.9%	26.6%	26.7%	1.0%	1046
Casanare	21.7%	28.6%	23.2%	25.8%	0.7%	2175
Cauca	25.6%	29.0%	21.1%	22.6%	1.7%	7502
Cesar	27.0%	27.4%	21.2%	23.1%	1.2%	4685
Chocó	28.6%	25.8%	19.7%	24.1%	1.8%	1702
Chía	13.4%	22.8%	30.8%	32.3%	0.7%	1324
Ciénaga	26.9%	30.4%	22.1%	18.1%	2.5%	1055
Cundinamarca	18.1%	26.0%	28.5%	26.4%	1.0%	12605
Córdoba	26.7%	29.2%	20.6%	22.1%	1.4%	8936
Cúcuta	21.3%	24.7%	25.5%	27.8%	0.7%	5700
Dosquebradas	17.0%	27.7%	30.5%	23.9%	0.9%	1210
Duitama	14.0%	24.7%	29.6%	31.5%	0.2%	1081
Envigado	16.2%	20.2%	28.1%	33.3%	2.2%	1299
Facatativá	16.6%	22.7%	30.0%	29.4%	1.2%	972
Florencia	21.8%	29.2%	23.6%	23.9%	1.5%	1290
Floridablanca	16.1%	24.0%	27.2%	31.9%	0.8%	1735
Fusagasugá	17.3%	25.0%	25.7%	29.7%	2.3%	888
Girardot	21.6%	31.1%	24.2%	22.6%	0.5%	753
Girón	20.1%	31.0%	23.8%	24.8%	0.4%	1082
Guainía	19.7%	27.2%	25.8%	25.8%	1.4%	213
Guaviare	22.6%	29.0%	24.6%	22.1%	1.7%	638
Huila	21.4%	29.5%	25.0%	23.2%	1.0%	4868
Ibagué	18.7%	26.7%	28.1%	25.5%	1.0%	4261
Ipiales	20.5%	26.0%	25.5%	27.2%	0.8%	887
Itagüí	26.0%	26.9%	22.6%	23.3%	1.3%	1396
Jamundí	20.3%	33.1%	22.7%	22.3%	1.6%	871
La Guajira	27.8%	28.4%	21.2%	21.5%	1.1%	2122
Lorica	28.5%	29.8%	21.2%	19.3%	1.2%	1137
Magangué	30.6%	31.4%	19.7%	17.4%	0.9%	938
Magdalena	27.9%	27.9%	21.4%	21.2%	1.6%	5494
Maicao	26.6%	27.5%	20.3%	24.1%	1.5%	1231
Malambo	27.1%	23.7%	23.5%	25.5%	0.2%	646

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Manizales	18.5%	27.3%	28.6%	24.3%	1.3%	2358
Medellín	20.9%	25.9%	27.0%	24.3%	1.9%	14697
Meta	21.4%	28.2%	24.3%	25.0%	1.0%	3749
Montería	25.6%	26.7%	21.8%	24.8%	1.1%	3470
Mosquera	16.7%	22.9%	29.3%	30.3%	0.9%	1038
Nariño	22.1%	26.5%	24.5%	24.3%	2.5%	5699
Neiva	19.7%	26.8%	26.7%	25.3%	1.5%	2661
Norte de Santander	21.5%	27.1%	25.2%	25.1%	1.0%	4830
Palmira	20.1%	26.4%	25.7%	25.6%	2.2%	2076
Pasto	20.7%	26.8%	25.5%	26.0%	1.0%	2821
Pereira	19.9%	25.6%	27.8%	25.1%	1.6%	3216
Piedecuesta	19.1%	26.3%	25.2%	28.3%	1.0%	968
Pitalito	17.5%	29.0%	25.7%	26.4%	1.4%	1016
Popayán	21.0%	27.7%	27.5%	21.9%	2.0%	2141
Putumayo	21.8%	27.6%	23.8%	22.7%	4.2%	2546
Quibdó	25.2%	26.0%	23.8%	21.7%	3.3%	1070
Quindío	23.8%	28.1%	24.9%	21.6%	1.6%	1677
Riohacha	25.7%	26.2%	20.6%	25.6%	1.9%	1338
Rionegro	19.8%	21.7%	30.1%	27.1%	1.3%	908
Risaralda	21.7%	28.0%	25.2%	22.9%	2.3%	1802
Sabaneta	14.9%	23.6%	20.8%	34.3%	6.3%	475
Sahagún	21.9%	29.7%	23.7%	24.1%	0.6%	976
San Andrés	30.7%	26.2%	20.0%	21.0%	2.1%	420
Santa Marta	24.0%	27.2%	23.9%	23.2%	1.7%	4381
Santander	19.9%	25.9%	25.9%	27.5%	0.8%	5407
Sincelejo	23.8%	27.8%	24.0%	23.2%	1.3%	2437
Soacha	21.1%	26.9%	27.7%	23.2%	1.1%	4454
Sogamoso	16.8%	26.5%	28.1%	28.1%	0.5%	1172
Soledad	23.3%	25.0%	25.0%	24.9%	1.8%	3696
Sucre	27.4%	29.8%	20.6%	21.2%	1.1%	5380
Tolima	23.7%	29.4%	24.7%	21.3%	0.9%	6450
Tuluá	21.1%	26.1%	29.5%	22.7%	0.6%	1636
Tumaco	27.4%	26.9%	21.5%	22.5%	1.7%	1292
Tunja	15.6%	23.5%	29.5%	31.0%	0.4%	1432
Turbo	27.1%	29.8%	20.0%	22.4%	0.7%	1310
Uribia	38.7%	25.6%	14.1%	19.8%	1.9%	313
Valle del Cauca	24.7%	28.2%	24.5%	20.9%	1.8%	5858
Valledupar	24.1%	26.8%	22.4%	25.0%	1.7%	3718
Vaupés	23.8%	30.4%	17.9%	26.3%	1.7%	240

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Vichada	27.4%	24.8%	21.8%	25.1%	0.9%	431
Villavicencio	19.0%	26.5%	25.4%	27.8%	1.4%	3816
Yopal	18.8%	27.0%	27.9%	25.6%	0.7%	1380
Yumbo	21.3%	28.3%	28.9%	20.4%	1.1%	930
Zipaquirá	15.7%	24.3%	33.4%	26.2%	0.4%	1081
Colombia	21.7%	26.7%	25.2%	24.9%	1.5%	346976

*Es posible que los porcentajes mostrados no sumen exactamente 100 debido a aproximaciones decimales.

• Pregunta 16.

Algunos valores de las variables relacionadas x y y se muestran en la tabla.

Variable x	**Variable y**
4	3
2	6
1,5	8
1,2	10

Tabla

A partir de los datos de la tabla, es correcto afirmar que

A. las variables x y y son inversamente proporcionales porque los productos obtenidos al multiplicar cada par de valores de x y y son iguales.
B. las variables x y y son inversamente proporcionales porque los valores de y son siempre menores a los de la variable x.
C. las variables x y y son directamente proporcionales porque al aumentar x aumenta y.
D. las variables x y y son directamente proporcionales porque los cociente obtenidos al dividir cada par de valores de x y y son iguales.

• Estructura

Competencia	Razonamiento
Componente	Numérico - variacional
Afirmación	Usar representaciones y procedimientos en situaciones de proporcionalidad directa e inversa.
Nivel de desempeño	Avanzado
Respuesta Correcta	A

• Resultados a nivel nacional y de Entidad Territorial certificada (ETC)

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Amazonas	23.9%	31.6%	27.8%	12.7%	4.0%	503
Antioquia	28.6%	26.6%	25.1%	17.4%	2.4%	15849
Apartadó	28.4%	24.9%	28.3%	16.2%	2.3%	959
Arauca	30.3%	25.2%	27.1%	15.9%	1.5%	1698
Armenia	30.8%	27.4%	23.6%	16.4%	1.8%	2085
Atlántico	26.9%	28.9%	25.6%	15.9%	2.8%	4927
Barrancabermeja	29.3%	26.0%	24.0%	18.0%	2.8%	1556

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Barranquilla	34.5%	24.6%	22.5%	16.1%	2.3%	9859
Bello	29.9%	26.3%	25.7%	16.6%	1.5%	3012
Bogotá, D.C.	32.7%	25.5%	23.7%	15.8%	2.3%	56273
Bolívar	27.8%	27.0%	25.2%	17.1%	2.9%	7352
Boyacá	28.6%	28.1%	27.2%	15.0%	1.1%	6710
Bucaramanga	35.2%	23.1%	23.5%	16.9%	1.3%	3788
Buenaventura	27.0%	27.1%	25.5%	17.1%	3.3%	2443
Buga	30.8%	26.1%	22.5%	19.3%	1.3%	701
Caldas	28.0%	26.5%	27.3%	16.6%	1.6%	3576
Cali	31.8%	26.3%	23.0%	16.5%	2.4%	15344
Caquetá	25.1%	28.0%	26.6%	17.1%	3.2%	1554
Cartagena	30.9%	26.4%	23.9%	16.6%	2.2%	8279
Cartago	31.1%	24.9%	26.0%	16.5%	1.5%	1046
Casanare	28.3%	27.5%	28.0%	15.1%	1.1%	2175
Cauca	26.0%	29.6%	26.6%	15.4%	2.3%	7502
Cesar	27.3%	28.0%	26.2%	16.5%	2.0%	4685
Chocó	27.1%	26.1%	26.1%	18.2%	2.5%	1702
Chía	34.1%	25.5%	22.4%	17.1%	0.8%	1324
Ciénaga	26.0%	29.0%	24.4%	17.6%	3.0%	1055
Cundinamarca	29.9%	26.7%	25.7%	16.2%	1.6%	12605
Córdoba	26.9%	27.6%	27.3%	16.3%	2.0%	8936
Cúcuta	33.4%	25.8%	23.1%	16.5%	1.1%	5700
Dosquebradas	32.6%	24.6%	25.2%	16.1%	1.4%	1210
Duitama	35.1%	24.4%	24.3%	15.4%	0.8%	1081
Envigado	37.0%	22.8%	20.8%	17.1%	2.3%	1299
Facatativá	31.5%	25.3%	24.5%	17.5%	1.2%	972
Florencia	28.7%	27.9%	25.4%	15.7%	2.2%	1290
Floridablanca	37.5%	24.8%	19.8%	17.1%	0.7%	1735
Fusagasugá	31.8%	25.0%	26.2%	15.0%	2.0%	888
Girardot	29.9%	27.9%	25.8%	15.0%	1.5%	753
Girón	31.2%	27.9%	25.0%	14.9%	1.0%	1082
Guainía	28.2%	31.9%	23.0%	15.5%	1.4%	213
Guaviare	27.1%	24.8%	27.9%	16.9%	3.3%	638
Huila	28.5%	27.0%	27.0%	16.2%	1.2%	4868
Ibagué	30.4%	27.2%	24.4%	16.5%	1.6%	4261
Ipiales	30.3%	26.8%	27.3%	14.7%	0.9%	887
Itagüí	31.4%	23.3%	25.8%	17.8%	1.7%	1396
Jamundí	27.0%	26.6%	29.2%	15.3%	2.0%	871
La Guajira	27.5%	28.2%	25.0%	17.3%	1.9%	2122

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Lorica	25.3%	29.4%	27.3%	16.6%	1.4%	1137
Magangué	24.9%	30.5%	27.6%	15.8%	1.2%	938
Magdalena	27.0%	28.4%	25.4%	16.6%	2.5%	5494
Maicao	28.6%	26.8%	24.2%	17.6%	2.8%	1231
Malambo	35.4%	25.1%	24.6%	13.6%	1.2%	646
Manizales	30.4%	26.1%	24.9%	17.3%	1.4%	2358
Medellín	31.1%	25.1%	24.4%	17.0%	2.5%	14697
Meta	29.1%	27.9%	25.6%	15.9%	1.5%	3749
Montería	29.8%	25.9%	25.8%	16.6%	1.9%	3470
Mosquera	31.1%	23.1%	27.9%	16.2%	1.6%	1038
Nariño	29.7%	27.4%	24.9%	15.0%	3.0%	5699
Neiva	32.2%	27.0%	23.3%	15.7%	1.8%	2661
Norte de Santander	30.0%	26.5%	26.0%	15.9%	1.6%	4830
Palmira	32.5%	26.4%	21.0%	18.1%	2.1%	2076
Pasto	30.0%	29.7%	24.3%	14.5%	1.5%	2821
Pereira	31.4%	24.4%	24.7%	17.4%	2.1%	3216
Piedecuesta	29.6%	26.9%	24.8%	16.9%	1.8%	968
Pitalito	32.1%	27.6%	24.6%	13.9%	1.9%	1016
Popayán	28.9%	26.2%	25.0%	16.9%	3.1%	2141
Putumayo	26.9%	27.2%	27.5%	13.9%	4.4%	2546
Quibdó	24.4%	25.7%	28.3%	17.5%	4.1%	1070
Quindío	28.5%	24.9%	28.0%	16.7%	1.9%	1677
Riohacha	30.6%	26.2%	25.0%	15.8%	2.3%	1338
Rionegro	30.9%	26.0%	24.3%	17.3%	1.4%	908
Risaralda	27.2%	27.4%	25.1%	17.2%	3.1%	1802
Sabaneta	35.8%	22.9%	20.4%	14.9%	5.9%	475
Sahagún	27.2%	29.0%	26.4%	15.9%	1.5%	976
San Andrés	22.6%	30.5%	24.0%	20.7%	2.1%	420
Santa Marta	29.0%	27.5%	25.1%	15.7%	2.7%	4381
Santander	31.2%	26.6%	24.8%	16.4%	1.1%	5407
Sincelejo	31.8%	25.4%	24.7%	16.2%	1.8%	2437
Soacha	30.0%	28.1%	24.1%	16.6%	1.2%	4454
Sogamoso	31.2%	27.0%	25.9%	15.2%	0.8%	1172
Soledad	33.6%	24.3%	23.2%	16.3%	2.6%	3696
Sucre	26.9%	28.0%	26.7%	16.7%	1.7%	5380
Tolima	25.9%	28.8%	26.0%	17.8%	1.4%	6450
Tuluá	30.4%	26.1%	22.8%	19.6%	1.0%	1636
Tumaco	24.5%	28.0%	26.5%	18.3%	2.7%	1292
Tunja	35.4%	25.1%	24.4%	14.2%	0.8%	1432

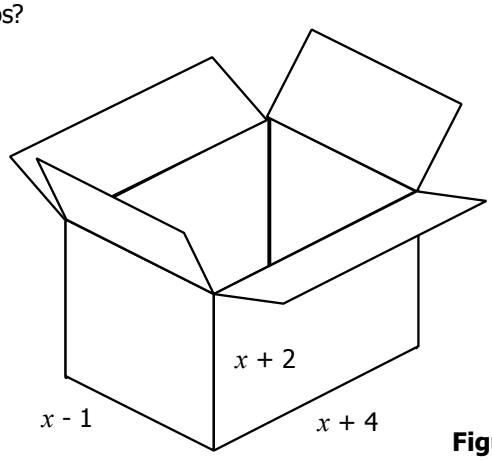
Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Turbo	24.3%	29.5%	27.4%	17.2%	1.6%	1310
Uribia	21.7%	36.4%	23.6%	16.6%	1.6%	313
Valle del Cauca	26.8%	26.5%	25.5%	18.8%	2.4%	5858
Valledupar	31.3%	25.8%	23.6%	16.7%	2.6%	3718
Vaupés	20.8%	32.1%	25.8%	18.3%	2.9%	240
Vichada	27.4%	25.8%	28.8%	16.0%	2.1%	431
Villavicencio	32.7%	24.5%	24.8%	16.2%	1.8%	3816
Yopal	28.6%	26.8%	26.2%	17.0%	1.3%	1380
Yumbo	29.7%	28.2%	24.0%	16.1%	2.0%	930
Zipaquirá	33.2%	23.8%	26.8%	15.2%	1.0%	1081
Colombia	30.2%	26.5%	24.9%	16.4%	2.1%	346976

*Es posible que los porcentajes mostrados no sumen exactamente 100 debido a aproximaciones decimales.

• Pregunta 17.

La función $f(x) = (x - 1)(x + 4)(x + 2)$ permite determinar el volumen en centímetros cúbicos de la caja que se muestra en la figura. ¿Cuál debe ser el valor que debe tomar x en centímetros para que el volumen sea 70 centímetros cúbicos?



Figura

A. 1
B. 2
C. 3
D. 4

• Estructura

Competencia	Resolución
Componente	Numérico - variacional
Afirmación	Resolver problemas en situaciones de variación con funciones polinómicas y exponenciales en contextos aritméticos y geométricos.
Nivel de desempeño	Avanzado
Respuesta Correcta	C

• Resultados a nivel nacional y de Entidad Territorial certificada (ETC)

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Amazonas	13.9%	25.0%	32.4%	25.4%	3.2%	503
Antioquia	13.6%	22.3%	34.2%	27.6%	2.3%	15849
Apartadó	14.6%	24.2%	32.6%	26.0%	2.6%	959
Arauca	15.3%	22.3%	37.8%	23.3%	1.3%	1698

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ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Armenia	15.0%	22.7%	36.0%	24.7%	1.6%	2085
Atlántico	15.3%	23.3%	33.3%	25.4%	2.7%	4927
Barrancabermeja	13.1%	23.5%	36.0%	24.4%	3.0%	1556
Barranquilla	14.0%	21.7%	38.5%	23.3%	2.5%	9859
Bello	13.7%	21.3%	37.5%	25.8%	1.7%	3012
Bogotá, D.C.	11.5%	21.8%	40.9%	23.5%	2.5%	56273
Bolívar	14.8%	23.4%	32.1%	27.0%	2.7%	7352
Boyacá	11.3%	21.3%	38.3%	28.3%	0.8%	6710
Bucaramanga	11.9%	21.9%	41.6%	23.0%	1.6%	3788
Buenaventura	15.8%	25.3%	27.8%	28.1%	3.0%	2443
Buga	13.6%	21.3%	34.1%	29.7%	1.4%	701
Caldas	13.5%	21.8%	34.7%	28.6%	1.4%	3576
Cali	12.7%	22.0%	39.0%	24.0%	2.4%	15344
Caquetá	13.8%	24.8%	30.8%	27.5%	3.1%	1554
Cartagena	15.3%	23.5%	35.3%	23.8%	2.1%	8279
Cartago	13.8%	21.7%	35.5%	27.4%	1.6%	1046
Casanare	12.0%	21.7%	37.8%	27.0%	1.4%	2175
Cauca	13.1%	22.6%	33.6%	28.4%	2.3%	7502
Cesar	14.0%	22.6%	34.0%	27.5%	1.9%	4685
Chocó	14.3%	22.3%	30.8%	29.7%	2.8%	1702
Chía	10.3%	19.3%	45.8%	23.6%	1.1%	1324
Ciénaga	16.7%	24.7%	31.4%	23.7%	3.5%	1055
Cundinamarca	11.7%	22.3%	38.9%	25.6%	1.5%	12605
Córdoba	15.0%	24.4%	31.2%	27.7%	1.8%	8936
Cúcuta	13.2%	22.2%	39.5%	24.1%	1.1%	5700
Dosquebradas	12.8%	24.0%	35.9%	26.0%	1.3%	1210
Duitama	9.6%	21.6%	46.6%	21.6%	0.5%	1081
Envigado	9.0%	19.6%	47.0%	21.9%	2.4%	1299
Facatativá	9.0%	20.8%	42.8%	26.0%	1.4%	972
Florencia	15.3%	22.9%	33.4%	26.4%	2.0%	1290
Floridablanca	12.0%	20.6%	46.1%	20.1%	1.2%	1735
Fusagasugá	11.8%	23.1%	40.8%	22.1%	2.3%	888
Girardot	13.4%	24.3%	34.7%	26.4%	1.2%	753
Girón	15.3%	21.1%	36.5%	26.2%	0.9%	1082
Guainía	7.5%	20.7%	37.1%	31.9%	2.8%	213
Guaviare	15.0%	26.6%	29.8%	26.2%	2.4%	638
Huila	13.2%	23.1%	35.6%	26.9%	1.2%	4868
Ibagué	12.7%	22.9%	37.1%	25.9%	1.4%	4261
Ipiales	12.4%	23.0%	41.0%	22.4%	1.1%	887

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Itagüí	16.8%	23.3%	34.5%	24.0%	1.5%	1396
Jamundí	12.6%	25.1%	33.9%	26.1%	2.3%	871
La Guajira	14.9%	22.6%	32.5%	28.5%	1.5%	2122
Lorica	15.9%	24.4%	29.0%	29.2%	1.5%	1137
Magangué	17.2%	21.1%	31.0%	29.1%	1.6%	938
Magdalena	13.8%	23.6%	31.9%	28.8%	2.0%	5494
Maicao	13.8%	21.0%	35.0%	27.9%	2.4%	1231
Malambo	14.2%	19.3%	42.0%	23.5%	0.9%	646
Manizales	11.9%	22.3%	36.1%	28.3%	1.5%	2358
Medellín	13.4%	22.8%	37.1%	24.3%	2.4%	14697
Meta	13.8%	23.9%	33.2%	27.6%	1.5%	3749
Montería	14.6%	24.9%	34.0%	24.8%	1.7%	3470
Mosquera	10.3%	21.8%	41.2%	24.9%	1.8%	1038
Nariño	12.2%	21.7%	35.3%	27.7%	3.1%	5699
Neiva	12.4%	22.8%	38.6%	24.5%	1.7%	2661
Norte de Santander	13.9%	21.5%	36.2%	27.2%	1.3%	4830
Palmira	11.4%	21.0%	40.0%	25.5%	2.1%	2076
Pasto	11.9%	22.2%	41.0%	23.7%	1.2%	2821
Pereira	12.6%	23.4%	37.1%	25.0%	1.9%	3216
Piedecuesta	13.4%	21.6%	40.6%	22.4%	2.0%	968
Pitalito	11.3%	21.0%	39.3%	26.9%	1.6%	1016
Popayán	12.5%	23.1%	37.7%	24.1%	2.7%	2141
Putumayo	14.2%	22.8%	34.2%	24.2%	4.6%	2546
Quibdó	16.2%	25.0%	29.0%	26.3%	3.6%	1070
Quindío	12.7%	24.7%	34.7%	25.6%	2.3%	1677
Riohacha	14.7%	23.8%	36.5%	22.2%	2.7%	1338
Rionegro	11.9%	20.0%	39.1%	27.4%	1.5%	908
Risaralda	13.1%	22.1%	33.3%	28.9%	2.6%	1802
Sabaneta	10.1%	21.9%	42.9%	19.2%	5.9%	475
Sahagún	14.2%	22.4%	34.5%	28.1%	0.7%	976
San Andrés	12.6%	24.0%	34.8%	26.7%	1.9%	420
Santa Marta	14.2%	23.8%	34.5%	25.2%	2.3%	4381
Santander	12.1%	22.7%	38.0%	26.1%	1.1%	5407
Sincelejo	15.4%	23.6%	35.5%	23.9%	1.6%	2437
Soacha	12.5%	23.7%	35.7%	26.8%	1.3%	4454
Sogamoso	12.2%	24.6%	38.6%	24.1%	0.6%	1172
Soledad	13.1%	20.9%	40.9%	22.5%	2.7%	3696
Sucre	14.7%	22.1%	33.2%	28.4%	1.7%	5380
Tolima	14.1%	25.0%	31.7%	27.7%	1.5%	6450

Continúa en la siguiente página

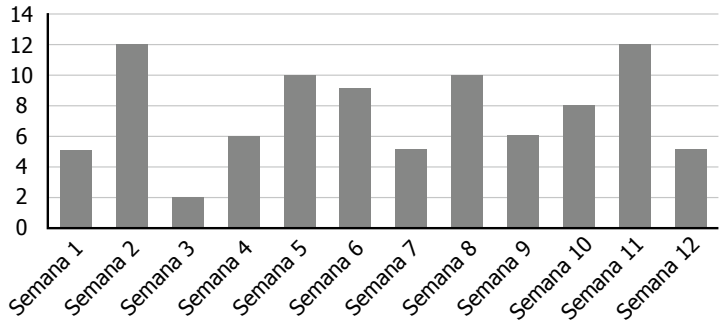
ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Tuluá	13.9%	21.6%	37.4%	26.2%	0.8%	1636
Tumaco	16.6%	27.2%	26.3%	27.4%	2.5%	1292
Tunja	10.3%	22.1%	44.9%	21.9%	0.8%	1432
Turbo	14.4%	25.8%	30.5%	28.2%	1.2%	1310
Uribia	11.5%	19.5%	37.4%	29.7%	1.9%	313
Valle del Cauca	13.9%	23.5%	33.2%	27.5%	1.9%	5858
Valledupar	14.4%	23.5%	37.2%	22.8%	2.1%	3718
Vaupés	11.3%	17.5%	28.3%	40.4%	2.5%	240
Vichada	10.9%	24.6%	33.4%	28.8%	2.3%	431
Villavicencio	13.2%	22.3%	40.2%	22.4%	1.8%	3816
Yopal	13.0%	25.8%	38.5%	21.5%	1.2%	1380
Yumbo	11.3%	24.9%	32.0%	30.0%	1.7%	930
Zipaquirá	9.8%	21.1%	43.4%	25.1%	0.6%	1081
Colombia	13.1%	22.6%	36.8%	25.5%	2.0%	346976

*Es posible que los porcentajes mostrados no sumen exactamente 100 debido a aproximaciones decimales.

• Pregunta 18.

Una persona analiza el precio de las acciones de una empresa y de acuerdo con ello invierte semanalmente. La gráfica muestra un registro de las inversiones de las últimas 12 semanas.

Dinero invertido en millones de pesos



Gráfica

De acuerdo con la información presentada en la gráfica es correcto afirmar que la inversión del accionista en las primeras

A. 4 semanas fue mayor que en las siguientes 4 semanas.

B. 5 semanas fue igual que en las últimas 5 semanas.

C. 4 semanas fue menor que en las últimas 4 semanas.

D. 6 semanas fue igual que en las últimas 6 semanas.

• Estructura

Competencia	Razonamiento
Componente	Aleatorio
Afirmación	Formular inferencias y justificar razonamientos y conclusiones a partir del análisis de información estadística.
Nivel de desempeño	Satisfactorio
Respuesta Correcta	C

- **Resultados a nivel nacional y de Entidad Territorial certificada (ETC)**

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Amazonas	19.3%	22.3%	32.6%	22.9%	3.0%	503
Antioquia	16.8%	19.3%	41.3%	20.4%	2.2%	15849
Apartadó	17.2%	21.0%	41.0%	18.7%	2.2%	959
Arauca	14.6%	19.5%	44.5%	19.9%	1.5%	1698
Armenia	16.0%	18.4%	45.9%	18.2%	1.5%	2085
Atlántico	17.8%	20.1%	37.9%	21.7%	2.6%	4927
Barrancabermeja	15.2%	19.0%	43.9%	19.1%	2.9%	1556
Barranquilla	15.9%	18.0%	45.4%	18.8%	2.0%	9859
Bello	14.7%	17.9%	46.9%	18.8%	1.6%	3012
Bogotá, D.C.	13.9%	17.5%	48.7%	17.7%	2.3%	56273
Bolívar	18.4%	21.9%	35.4%	21.8%	2.6%	7352
Boyacá	14.9%	18.0%	47.1%	19.2%	0.7%	6710
Bucaramanga	13.7%	16.1%	50.0%	18.6%	1.6%	3788
Buenaventura	18.7%	20.9%	35.8%	21.6%	3.0%	2443
Buga	14.1%	16.8%	45.4%	22.3%	1.4%	701
Caldas	16.4%	18.8%	43.4%	20.0%	1.4%	3576
Cali	16.0%	17.8%	45.8%	18.3%	2.1%	15344
Caquetá	17.2%	19.0%	41.6%	19.0%	3.1%	1554
Cartagena	17.5%	19.6%	41.0%	20.0%	1.9%	8279
Cartago	15.1%	17.8%	49.6%	16.2%	1.3%	1046
Casanare	15.8%	18.5%	44.5%	19.6%	1.7%	2175
Cauca	18.8%	20.3%	37.3%	21.5%	2.1%	7502
Cesar	18.9%	18.8%	39.8%	21.0%	1.5%	4685
Chocó	18.4%	23.7%	33.5%	21.9%	2.4%	1702
Chía	12.1%	16.4%	52.6%	18.1%	0.8%	1324
Ciénaga	18.4%	24.4%	31.4%	22.7%	3.2%	1055
Cundinamarca	14.9%	19.0%	46.8%	17.7%	1.5%	12605
Córdoba	18.2%	20.9%	37.6%	21.6%	1.7%	8936
Cúcuta	15.2%	17.0%	49.5%	17.2%	1.1%	5700
Dosquebradas	16.7%	17.6%	45.3%	19.3%	1.2%	1210
Duitama	11.6%	18.1%	53.4%	16.3%	0.6%	1081
Envigado	14.2%	16.4%	49.6%	16.6%	3.2%	1299
Facatativá	10.3%	16.2%	55.5%	16.8%	1.3%	972
Florencia	14.7%	20.6%	45.5%	17.7%	1.6%	1290
Floridablanca	13.7%	15.6%	53.1%	16.7%	0.9%	1735
Fusagasugá	14.2%	17.5%	45.3%	20.5%	2.6%	888
Girardot	16.3%	21.6%	42.0%	18.7%	1.3%	753
Girón	14.8%	16.3%	51.1%	16.9%	0.9%	1082

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Guainía	18.3%	21.6%	35.2%	22.5%	2.3%	213
Guaviare	15.7%	17.4%	45.0%	19.7%	2.2%	638
Huila	15.6%	18.7%	45.5%	19.0%	1.2%	4868
Ibagué	16.4%	17.6%	46.7%	18.1%	1.2%	4261
Ipiales	15.4%	18.4%	46.2%	18.9%	1.0%	887
Itagüí	17.7%	19.6%	41.7%	19.7%	1.3%	1396
Jamundí	16.4%	18.4%	42.8%	20.4%	2.0%	871
La Guajira	19.6%	21.6%	36.1%	21.0%	1.7%	2122
Lorica	18.3%	20.5%	36.7%	22.9%	1.7%	1137
Magangué	18.8%	22.9%	36.0%	21.0%	1.3%	938
Magdalena	19.0%	21.7%	36.3%	20.8%	2.1%	5494
Maicao	16.2%	18.8%	38.1%	24.5%	2.4%	1231
Malambo	13.9%	18.1%	46.4%	20.0%	1.5%	646
Manizales	18.4%	17.5%	44.2%	18.3%	1.5%	2358
Medellín	16.5%	19.0%	43.0%	19.2%	2.3%	14697
Meta	16.4%	19.1%	43.6%	19.5%	1.3%	3749
Montería	17.9%	19.3%	40.5%	20.6%	1.7%	3470
Mosquera	12.5%	16.8%	53.9%	15.6%	1.3%	1038
Nariño	15.2%	17.9%	45.6%	18.3%	3.1%	5699
Neiva	14.4%	18.1%	48.1%	17.4%	2.1%	2661
Norte de Santander	15.4%	18.5%	46.2%	18.9%	1.0%	4830
Palmira	13.9%	17.1%	49.8%	17.3%	1.9%	2076
Pasto	14.4%	16.8%	47.6%	19.9%	1.2%	2821
Pereira	14.2%	19.2%	44.4%	20.0%	2.1%	3216
Piedecuesta	14.0%	20.5%	45.2%	19.1%	1.1%	968
Pitalito	13.5%	21.0%	47.4%	16.7%	1.4%	1016
Popayán	16.5%	18.0%	44.7%	18.7%	2.1%	2141
Putumayo	15.5%	18.4%	42.2%	19.5%	4.4%	2546
Quibdó	19.9%	23.7%	31.2%	21.5%	3.6%	1070
Quindío	15.7%	18.7%	44.5%	19.1%	2.0%	1677
Riohacha	19.0%	21.5%	39.2%	17.9%	2.3%	1338
Rionegro	14.3%	18.7%	47.8%	18.0%	1.2%	908
Risaralda	18.1%	19.0%	39.5%	20.9%	2.5%	1802
Sabaneta	15.4%	13.3%	51.6%	13.9%	5.9%	475
Sahagún	14.9%	19.3%	45.2%	19.9%	0.8%	976
San Andrés	17.4%	21.9%	35.7%	22.9%	2.1%	420
Santa Marta	17.1%	20.0%	40.5%	20.3%	2.1%	4381
Santander	14.8%	17.1%	48.5%	18.4%	1.2%	5407
Sincelejo	17.5%	17.7%	42.1%	20.8%	1.9%	2437

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Soacha	15.0%	18.6%	46.4%	18.7%	1.3%	4454
Sogamoso	16.8%	17.6%	45.5%	19.3%	0.9%	1172
Soledad	16.0%	18.9%	43.8%	18.8%	2.5%	3696
Sucre	18.0%	22.1%	36.3%	22.2%	1.5%	5380
Tolima	16.5%	19.9%	41.6%	20.7%	1.3%	6450
Tuluá	15.8%	18.5%	46.0%	18.8%	0.9%	1636
Tumaco	20.3%	20.1%	34.8%	22.1%	2.6%	1292
Tunja	13.1%	17.4%	51.7%	17.2%	0.6%	1432
Turbo	17.6%	20.0%	39.2%	22.1%	1.1%	1310
Uribia	16.3%	22.0%	34.5%	24.0%	3.2%	313
Valle del Cauca	16.6%	20.0%	41.8%	19.7%	1.9%	5858
Valledupar	16.6%	17.3%	42.3%	22.1%	1.7%	3718
Vaupés	17.1%	24.2%	29.6%	26.3%	2.9%	240
Vichada	17.2%	20.0%	39.2%	22.0%	1.6%	431
Villavicencio	13.9%	17.6%	48.6%	18.1%	1.8%	3816
Yopal	16.2%	18.6%	45.1%	18.8%	1.2%	1380
Yumbo	15.2%	19.1%	44.3%	20.2%	1.2%	930
Zipaquirá	12.9%	18.5%	49.3%	19.1%	0.3%	1081
Colombia	15.9%	18.8%	44.1%	19.3%	1.9%	346976

*Es posible que los porcentajes mostrados no sumen exactamente 100 debido a aproximaciones decimales.

• Pregunta 19.

Una compañía realizó una investigación para conocer la cantidad de barriles de petróleo producidos por las ciudades de cuatro departamentos del país, en tres meses del año, y obtuvo los resultados que se muestran en la tabla.

Mes \ Departamento	Departamento 1	Departamento 2	Departamento 3	Departamento 4
Enero	6.000	5.000	2.500	3.000
Febrero	5.000	5.500	7.500	8.000
Marzo	6.000	4.500	8.000	5.000

Tabla

Si los departamentos 1 y 2 conforman la región P, y los departamentos 3 y 4 conforman la región Q, ¿cuál región produjo más barriles de petróleo durante los tres meses?

A. Región P, con 21.500 barriles.
B. Región Q, con 34.000 barriles.
C. Región P, con 32.000 barriles.
D. Región Q, con 18.000 barriles.

• Estructura

Competencia	Resolución
Componente	Aleatorio
Afirmación	Resolver y formular problemas a partir de un conjunto de datos presentado en tablas, diagramas de barras y diagrama circular.
Nivel de desempeño	Mínimo
Respuesta Correcta	B

• Resultados a nivel nacional y de Entidad Territorial certificada (ETC)

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Amazonas	7.2%	69.0%	14.7%	6.8%	2.4%	503
Antioquia	9.9%	71.0%	14.0%	4.0%	1.1%	15846
Apartadó	12.5%	66.4%	16.3%	3.1%	1.7%	961
Arauca	6.9%	76.9%	12.2%	3.4%	0.5%	1698
Armenia	9.9%	71.7%	14.1%	3.5%	0.8%	2087
Atlántico	12.6%	65.6%	15.1%	5.4%	1.3%	4931
Barrancabermeja	11.5%	71.0%	11.7%	3.7%	2.1%	1556
Barranquilla	9.4%	72.8%	13.7%	3.3%	0.9%	9853

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Bello	10.4%	72.7%	13.2%	3.0%	0.7%	3014
Bogotá, D.C.	6.8%	77.3%	12.6%	2.6%	0.7%	56273
Bolívar	12.8%	64.7%	15.4%	5.6%	1.5%	7349
Boyacá	6.0%	75.8%	14.1%	3.8%	0.3%	6707
Bucaramanga	6.0%	79.6%	11.8%	1.9%	0.6%	3786
Buenaventura	10.8%	69.1%	14.4%	5.0%	0.7%	2444
Buga	7.4%	75.9%	13.3%	2.4%	1.0%	701
Caldas	9.0%	72.8%	13.9%	3.9%	0.3%	3575
Cali	9.8%	73.6%	12.5%	3.1%	1.0%	15344
Caquetá	7.5%	71.8%	12.5%	5.5%	2.8%	1555
Cartagena	14.3%	66.8%	13.5%	4.4%	1.1%	8278
Cartago	8.3%	74.8%	12.6%	3.6%	0.7%	1046
Casanare	7.7%	75.4%	13.1%	3.4%	0.4%	2174
Cauca	8.9%	71.5%	13.6%	5.1%	0.9%	7501
Cesar	12.6%	67.8%	13.6%	5.1%	1.0%	4683
Chocó	17.3%	60.3%	14.6%	6.6%	1.1%	1701
Chía	5.4%	79.9%	12.1%	2.3%	0.4%	1323
Ciénaga	13.8%	64.5%	14.4%	6.0%	1.3%	1054
Cundinamarca	5.9%	77.7%	13.1%	2.9%	0.4%	12603
Córdoba	12.2%	67.0%	14.6%	5.4%	0.8%	8936
Cúcuta	6.8%	77.4%	12.1%	3.2%	0.5%	5698
Dosquebradas	5.7%	78.3%	12.8%	3.0%	0.2%	1210
Duitama	4.2%	82.0%	11.7%	2.2%	0.0%	1081
Envigado	8.0%	78.4%	10.7%	2.1%	0.8%	1300
Facatativá	4.7%	78.5%	12.8%	3.1%	0.9%	972
Florencia	6.7%	77.6%	12.4%	2.5%	0.8%	1290
Floridablanca	5.2%	81.2%	11.9%	1.4%	0.2%	1735
Fusagasugá	5.6%	77.5%	12.7%	2.8%	1.3%	889
Girardot	8.6%	71.7%	15.5%	4.0%	0.1%	753
Girón	5.9%	78.7%	11.3%	4.1%	0.0%	1082
Guainía	8.0%	77.9%	10.8%	2.8%	0.5%	213
Guaviare	5.8%	75.9%	12.5%	4.2%	1.6%	638
Huila	6.2%	75.4%	13.8%	3.9%	0.7%	4868
Ibagué	7.6%	75.2%	13.2%	3.3%	0.8%	4262
Ipiales	5.9%	75.5%	13.7%	4.7%	0.2%	886
Itagüí	17.8%	63.6%	13.5%	4.3%	0.7%	1396
Jamundí	9.9%	73.1%	11.3%	4.9%	0.8%	871
La Guajira	11.8%	66.2%	15.8%	5.4%	0.8%	2123
Lorica	14.5%	59.1%	18.8%	6.7%	1.0%	1138

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Magangué	10.4%	70.3%	13.9%	4.8%	0.6%	938
Magdalena	11.9%	66.6%	15.1%	5.4%	1.0%	5493
Maicao	12.2%	65.9%	14.4%	6.4%	1.1%	1232
Malambo	13.8%	66.3%	15.1%	4.6%	0.2%	647
Manizales	7.2%	75.3%	14.0%	2.9%	0.6%	2359
Medellín	11.4%	70.9%	13.2%	3.1%	1.3%	14697
Meta	8.4%	73.2%	14.3%	3.6%	0.5%	3749
Montería	10.8%	69.0%	15.6%	3.9%	0.8%	3472
Mosquera	5.2%	79.8%	13.1%	1.7%	0.2%	1038
Nariño	6.7%	74.1%	13.3%	4.1%	1.8%	5697
Neiva	5.9%	77.4%	12.0%	3.8%	1.0%	2661
Norte de Santander	6.9%	75.4%	13.5%	3.4%	0.7%	4832
Palmira	6.3%	77.2%	12.7%	3.3%	0.5%	2076
Pasto	5.9%	77.3%	12.9%	3.5%	0.5%	2821
Pereira	7.1%	75.9%	12.6%	3.4%	1.0%	3216
Piedecuesta	6.1%	78.2%	12.0%	3.0%	0.7%	967
Pitalito	6.1%	77.4%	13.4%	2.5%	0.6%	1014
Popayán	5.4%	78.9%	11.9%	2.9%	0.9%	2142
Putumayo	7.9%	75.5%	12.0%	3.6%	1.0%	2550
Quibdó	13.6%	65.1%	13.6%	4.7%	2.9%	1070
Quindío	8.0%	72.9%	14.7%	3.3%	1.1%	1677
Riohacha	11.2%	68.7%	13.7%	5.2%	1.2%	1338
Rionegro	7.4%	74.3%	14.5%	2.6%	1.1%	908
Risaralda	7.6%	70.9%	15.5%	4.5%	1.5%	1802
Sabaneta	5.7%	74.7%	11.8%	2.5%	5.3%	475
Sahagún	10.9%	68.5%	13.9%	6.1%	0.5%	976
San Andrés	17.9%	63.3%	16.0%	2.1%	0.7%	420
Santa Marta	11.3%	69.1%	14.4%	4.2%	1.0%	4382
Santander	6.5%	77.3%	12.6%	3.1%	0.5%	5408
Sincelejo	9.4%	71.8%	13.2%	5.0%	0.5%	2438
Soacha	8.1%	74.3%	13.6%	3.2%	0.8%	4454
Sogamoso	5.8%	80.0%	11.5%	2.6%	0.1%	1174
Soledad	11.3%	69.7%	13.6%	3.9%	1.6%	3697
Sucre	11.7%	66.8%	15.2%	5.5%	0.7%	5380
Tolima	8.7%	70.5%	15.6%	4.7%	0.6%	6451
Tuluá	7.8%	75.1%	14.0%	2.9%	0.1%	1636
Tumaco	11.8%	64.2%	15.5%	7.1%	1.4%	1293
Tunja	6.2%	79.1%	11.9%	2.4%	0.4%	1434
Turbo	11.8%	67.3%	14.7%	5.4%	0.8%	1310

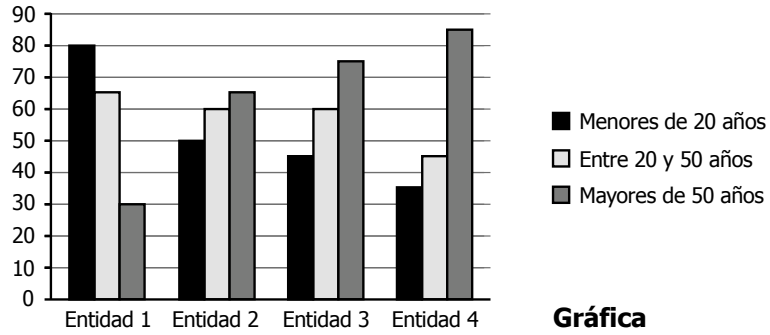
Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Uribia	6.4%	69.8%	13.5%	10.3%	0.0%	311
Valle del Cauca	9.7%	71.1%	13.8%	4.6%	0.8%	5857
Valledupar	10.5%	71.1%	13.0%	4.3%	1.1%	3720
Vaupés	13.8%	67.5%	13.3%	5.4%	0.0%	240
Vichada	5.3%	73.3%	16.0%	4.6%	0.7%	431
Villavicencio	5.9%	78.9%	12.0%	2.5%	0.8%	3818
Yopal	5.7%	77.2%	13.0%	3.9%	0.3%	1379
Yumbo	9.7%	72.4%	14.1%	3.5%	0.3%	930
Zipaquirá	5.7%	79.5%	12.5%	2.0%	0.3%	1081
Colombia	8.8%	73.2%	13.4%	3.7%	0.8%	346978

*Es posible que los porcentajes mostrados no sumen exactamente 100 debido a aproximaciones decimales.

• Pregunta 20.

Se realiza una encuesta a una población sobre su afiliación a la entidad prestadora de salud. Los resultados se muestran en la gráfica.



Gráfica

La entidad con más afiliados es

A. 1.
B. 2.
C. 3.
D. 4.

• Estructura

Competencia	Comunicación
Componente	Aleatorio
Afirmación	Reconocer la media, mediana y moda con base en la representación de un conjunto de datos y explicitar sus diferencias en distribuciones diferentes.
Nivel de desempeño	Satisfactorio
Respuesta Correcta	C

• Resultados a nivel nacional y de Entidad Territorial certificada (ETC)

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Amazonas	16.9%	14.9%	28.6%	37.4%	2.2%	503
Antioquia	16.7%	13.8%	41.1%	27.2%	1.2%	15846
Apartadó	16.2%	17.8%	40.0%	24.6%	1.5%	961
Arauca	17.1%	13.0%	49.2%	20.2%	0.5%	1698
Armenia	16.1%	14.3%	46.0%	23.0%	0.7%	2087

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Atlántico	18.1%	14.3%	34.6%	31.7%	1.3%	4931
Barrancabermeja	16.6%	13.7%	46.7%	21.1%	1.8%	1556
Barranquilla	17.7%	12.2%	46.2%	23.0%	0.9%	9853
Bello	16.6%	15.1%	47.1%	20.5%	0.8%	3014
Bogotá, D.C.	15.6%	13.2%	50.5%	20.0%	0.7%	56273
Bolívar	17.5%	13.6%	34.2%	33.2%	1.5%	7349
Boyacá	15.8%	12.3%	50.8%	20.9%	0.3%	6707
Bucaramanga	15.2%	10.6%	58.6%	15.2%	0.4%	3786
Buenaventura	18.7%	14.3%	31.0%	35.0%	0.9%	2444
Buga	15.4%	14.0%	49.1%	21.0%	0.6%	701
Caldas	17.8%	13.3%	39.9%	28.7%	0.3%	3575
Cali	17.7%	13.6%	45.9%	21.9%	0.9%	15344
Caquetá	16.5%	13.7%	40.3%	27.0%	2.5%	1555
Cartagena	18.2%	14.3%	38.1%	28.4%	1.0%	8278
Cartago	16.6%	13.6%	48.6%	20.6%	0.7%	1046
Casanare	17.4%	12.7%	48.1%	21.4%	0.3%	2174
Cauca	15.8%	13.1%	33.5%	36.6%	1.0%	7501
Cesar	17.6%	13.7%	39.3%	28.4%	1.1%	4683
Chocó	19.0%	13.6%	29.5%	36.9%	0.9%	1701
Chía	14.0%	12.2%	57.2%	16.3%	0.3%	1323
Ciénaga	15.7%	13.7%	34.0%	35.6%	1.0%	1054
Cundinamarca	16.1%	12.9%	49.2%	21.5%	0.3%	12603
Córdoba	16.7%	15.1%	33.3%	34.0%	0.9%	8936
Cúcuta	15.2%	11.8%	52.5%	20.2%	0.3%	5698
Dosquebradas	18.5%	11.8%	48.4%	21.0%	0.2%	1210
Duitama	11.8%	11.4%	62.5%	14.2%	0.1%	1081
Envigado	16.4%	12.1%	57.8%	12.8%	0.9%	1300
Facatativá	15.8%	10.5%	53.9%	18.8%	0.9%	972
Florencia	17.6%	12.2%	46.3%	23.1%	0.8%	1290
Floridablanca	15.8%	11.5%	56.1%	16.3%	0.3%	1735
Fusagasugá	15.2%	12.5%	51.6%	19.1%	1.6%	889
Girardot	18.2%	12.6%	42.9%	26.0%	0.3%	753
Girón	17.4%	14.1%	49.3%	19.0%	0.2%	1082
Guainía	13.6%	11.3%	32.9%	42.3%	0.0%	213
Guaviare	14.6%	16.3%	41.1%	26.3%	1.7%	638
Huila	16.7%	13.9%	43.8%	24.8%	0.7%	4868
Ibagué	16.6%	12.5%	49.1%	21.0%	0.8%	4262
Ipiales	16.8%	12.1%	53.0%	17.6%	0.5%	886
Itagüí	16.0%	17.4%	46.4%	19.6%	0.6%	1396

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Jamundí	16.6%	16.4%	39.4%	26.6%	0.9%	871
La Guajira	16.3%	13.2%	35.0%	34.9%	0.6%	2123
Lorica	17.9%	15.3%	32.3%	33.6%	0.9%	1138
Magangué	17.2%	16.2%	32.5%	33.7%	0.4%	938
Magdalena	16.8%	12.4%	33.0%	36.6%	1.1%	5493
Maicao	18.5%	12.6%	34.5%	33.5%	0.9%	1232
Malambo	17.2%	13.3%	41.1%	28.3%	0.2%	647
Manizales	18.9%	12.9%	42.9%	24.9%	0.4%	2359
Medellín	17.4%	15.1%	44.8%	21.5%	1.3%	14697
Meta	17.4%	14.6%	44.1%	23.6%	0.3%	3749
Montería	17.7%	14.3%	39.3%	27.9%	0.8%	3472
Mosquera	14.8%	9.2%	58.6%	17.2%	0.2%	1038
Nariño	14.1%	11.5%	46.1%	26.3%	2.0%	5697
Neiva	15.8%	9.8%	52.2%	21.2%	1.0%	2661
Norte de Santander	16.7%	11.8%	45.8%	24.9%	0.7%	4832
Palmira	17.9%	12.8%	48.5%	20.2%	0.5%	2076
Pasto	15.7%	13.0%	52.0%	18.8%	0.5%	2821
Pereira	17.8%	13.3%	46.8%	21.1%	1.1%	3216
Piedecuesta	14.5%	12.3%	55.3%	17.2%	0.7%	967
Pitalito	16.8%	10.8%	51.5%	20.3%	0.6%	1014
Popayán	17.2%	12.4%	47.2%	22.3%	0.9%	2142
Putumayo	16.5%	13.6%	44.4%	24.4%	1.0%	2550
Quibdó	20.6%	13.3%	30.0%	33.0%	3.2%	1070
Quindío	15.9%	12.6%	44.3%	26.2%	1.0%	1677
Riohacha	16.2%	13.5%	38.5%	30.4%	1.4%	1338
Rionegro	16.0%	14.5%	51.8%	16.6%	1.1%	908
Risaralda	17.6%	15.2%	35.1%	30.6%	1.4%	1802
Sabaneta	14.5%	9.3%	57.3%	13.5%	5.5%	475
Sahagún	18.6%	13.2%	39.2%	28.2%	0.7%	976
San Andrés	18.6%	17.4%	33.8%	29.3%	1.0%	420
Santa Marta	17.8%	12.6%	39.4%	29.1%	1.0%	4382
Santander	15.8%	11.8%	50.7%	21.2%	0.5%	5408
Sincelejo	18.7%	12.3%	40.9%	27.4%	0.7%	2438
Soacha	16.9%	13.7%	44.7%	24.0%	0.7%	4454
Sogamoso	15.6%	12.7%	53.6%	17.9%	0.3%	1174
Soledad	18.1%	12.3%	43.5%	24.6%	1.5%	3697
Sucre	17.1%	14.2%	31.3%	36.7%	0.7%	5380
Tolima	16.7%	13.4%	36.4%	32.7%	0.7%	6451
Tuluá	15.5%	14.2%	46.7%	23.5%	0.1%	1636

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Tumaco	16.3%	14.0%	30.0%	38.1%	1.5%	1293
Tunja	14.9%	10.9%	58.8%	15.2%	0.2%	1434
Turbo	17.8%	14.0%	33.0%	34.6%	0.6%	1310
Uribia	13.8%	14.8%	27.0%	44.4%	0.0%	311
Valle del Cauca	16.9%	15.8%	39.3%	27.3%	0.8%	5857
Valledupar	18.6%	13.5%	40.9%	25.9%	1.1%	3720
Vaupés	16.7%	12.1%	19.2%	51.7%	0.4%	240
Vichada	17.9%	11.6%	40.4%	29.2%	0.9%	431
Villavicencio	15.6%	11.5%	53.2%	18.9%	0.7%	3818
Yopal	15.4%	12.7%	51.8%	19.9%	0.1%	1379
Yumbo	16.9%	15.3%	41.2%	26.2%	0.4%	930
Zipaquirá	17.8%	11.4%	49.0%	21.7%	0.1%	1081
Colombia	16.7%	13.3%	44.5%	24.7%	0.8%	346978

*Es posible que los porcentajes mostrados no sumen exactamente 100 debido a aproximaciones decimales.

• Pregunta 21.

Un inversionista desea entrar en el mundo de las apuestas de carreras de perros y se interesa por una particular en la que compiten 6 perros y se apuesta por la posición que ocupará cada uno de ellos. El inversionista se acerca a la taquilla de apuestas y dice que pretende apostar un tiquete por cada permutación posible en la que Pluto, su perro favorito, llegue en primer lugar. Finalmente, el inversionista paga

A. 120 tiquetes de apuesta.
B. 720 tiquetes de apuesta.
C. 7.776 tiquetes de apuesta.
D. 46.656 tiquetes de apuesta.

• Estructura

Competencia	Razonamiento
Componente	Aleatorio
Afirmación	Utilizar diferentes métodos y estrategias para calcular la probabilidad de eventos simples.
Nivel de desempeño	Satisfactorio
Respuesta Correcta	A

• Resultados a nivel nacional y de Entidad Territorial certificada (ETC)

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Amazonas	45.5%	23.1%	17.1%	11.7%	2.6%	503
Antioquia	47.7%	28.8%	13.5%	8.1%	1.9%	15846
Apartadó	45.7%	28.8%	15.4%	8.4%	1.7%	961
Arauca	54.8%	24.9%	12.0%	7.1%	1.2%	1698
Armenia	47.3%	31.7%	11.3%	8.0%	1.8%	2087
Atlántico	44.8%	25.7%	16.2%	11.0%	2.3%	4931
Barrancabermeja	49.4%	28.4%	12.8%	7.1%	2.3%	1556
Barranquilla	49.8%	28.3%	12.1%	7.7%	2.1%	9853
Bello	50.0%	29.8%	11.8%	6.6%	1.7%	3014
Bogotá, D.C.	50.8%	30.1%	11.5%	5.8%	1.9%	56273
Bolívar	45.9%	25.4%	15.6%	10.5%	2.6%	7349
Boyacá	54.6%	28.1%	10.9%	5.7%	0.7%	6707
Bucaramanga	55.6%	25.6%	10.9%	6.0%	1.8%	3786
Buenaventura	45.8%	24.1%	16.1%	12.2%	1.9%	2444
Buga	52.1%	25.4%	13.4%	7.1%	2.0%	701

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Caldas	50.8%	27.1%	13.0%	8.1%	1.0%	3575
Cali	47.4%	30.3%	12.7%	7.4%	2.2%	15344
Caquetá	47.2%	25.1%	14.5%	10.2%	3.0%	1555
Cartagena	45.1%	29.1%	14.8%	8.9%	2.1%	8278
Cartago	51.2%	29.3%	10.5%	7.5%	1.4%	1046
Casanare	53.7%	27.5%	11.6%	6.3%	1.0%	2174
Cauca	46.5%	26.0%	15.1%	10.5%	1.9%	7501
Cesar	48.4%	27.0%	13.2%	9.9%	1.6%	4683
Chocó	39.3%	23.8%	20.3%	15.3%	1.3%	1701
Chía	54.1%	29.7%	9.1%	5.9%	1.1%	1323
Ciénaga	47.0%	23.6%	16.4%	10.8%	2.2%	1054
Cundinamarca	55.4%	27.1%	10.4%	5.9%	1.3%	12603
Córdoba	45.3%	26.0%	16.1%	11.0%	1.5%	8936
Cúcuta	54.2%	25.8%	11.6%	6.7%	1.6%	5698
Dosquebradas	50.2%	30.5%	11.2%	7.0%	1.2%	1210
Duitama	59.8%	26.4%	8.8%	4.3%	0.8%	1081
Envigado	50.8%	29.6%	11.9%	5.8%	1.8%	1300
Facatativá	56.1%	28.9%	8.5%	5.1%	1.3%	972
Florencia	49.5%	27.5%	13.3%	7.8%	1.9%	1290
Floridablanca	56.2%	28.6%	8.8%	5.4%	1.1%	1735
Fusagasugá	57.3%	22.6%	10.8%	7.0%	2.4%	889
Girardot	49.0%	30.0%	14.1%	5.8%	1.1%	753
Girón	57.5%	25.0%	10.5%	5.5%	1.5%	1082
Guainía	42.3%	24.9%	14.6%	16.0%	2.3%	213
Guaviare	48.9%	24.8%	13.8%	9.4%	3.1%	638
Huila	53.8%	26.0%	11.6%	7.4%	1.2%	4868
Ibagué	52.3%	27.2%	11.9%	6.9%	1.7%	4262
Ipiales	52.6%	28.1%	10.0%	7.3%	1.9%	886
Itagüí	45.6%	26.5%	17.5%	8.6%	1.9%	1396
Jamundí	48.8%	25.8%	13.7%	9.2%	2.5%	871
La Guajira	47.3%	25.2%	15.2%	11.0%	1.2%	2123
Lorica	44.0%	26.4%	16.5%	11.0%	2.1%	1138
Magangué	47.4%	24.5%	14.8%	11.4%	1.8%	938
Magdalena	44.1%	25.7%	16.4%	12.0%	1.9%	5493
Maicao	49.3%	24.9%	14.0%	10.3%	1.5%	1232
Malambo	45.3%	27.5%	15.9%	9.1%	2.2%	647
Manizales	50.9%	29.8%	11.8%	6.5%	1.0%	2359
Medellín	46.6%	30.4%	13.8%	7.0%	2.2%	14697
Meta	50.5%	26.9%	13.1%	8.5%	1.1%	3749

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Montería	47.3%	27.5%	14.8%	9.1%	1.3%	3472
Mosquera	52.3%	29.6%	10.4%	5.9%	1.8%	1038
Nariño	52.8%	24.5%	11.2%	8.6%	2.9%	5697
Neiva	52.7%	27.7%	11.5%	5.7%	2.3%	2661
Norte de Santander	55.0%	24.7%	11.4%	7.3%	1.5%	4832
Palmira	55.8%	26.2%	9.5%	6.7%	1.8%	2076
Pasto	56.2%	24.7%	10.2%	6.9%	1.9%	2821
Pereira	51.7%	26.4%	13.5%	6.0%	2.4%	3216
Piedecuesta	54.0%	27.8%	12.6%	4.3%	1.2%	967
Pitalito	53.8%	25.4%	10.8%	8.2%	1.7%	1014
Popayán	52.1%	26.0%	11.8%	8.1%	2.1%	2142
Putumayo	50.7%	26.1%	13.2%	8.0%	2.0%	2550
Quibdó	39.6%	27.3%	17.8%	11.5%	3.8%	1070
Quindío	50.6%	28.7%	13.1%	6.1%	1.4%	1677
Riohacha	48.7%	23.7%	13.5%	11.9%	2.3%	1338
Rionegro	48.1%	31.5%	13.3%	5.2%	1.9%	908
Risaralda	50.6%	27.5%	12.1%	7.5%	2.2%	1802
Sabaneta	55.4%	25.3%	9.5%	3.8%	6.1%	475
Sahagún	49.3%	25.8%	15.1%	8.2%	1.6%	976
San Andrés	47.1%	30.2%	11.4%	9.8%	1.4%	420
Santa Marta	46.7%	27.6%	13.7%	9.8%	2.2%	4382
Santander	57.2%	25.1%	9.7%	6.7%	1.2%	5408
Sincelejo	51.4%	25.9%	13.1%	8.2%	1.5%	2438
Soacha	51.9%	28.0%	11.7%	6.6%	1.8%	4454
Sogamoso	61.4%	24.1%	7.7%	5.9%	0.9%	1174
Soledad	47.9%	28.0%	12.8%	8.4%	2.9%	3697
Sucre	45.9%	24.6%	17.0%	10.7%	1.7%	5380
Tolima	50.9%	26.0%	13.2%	8.5%	1.3%	6451
Tuluá	53.1%	28.4%	11.8%	6.1%	0.6%	1636
Tumaco	41.7%	25.0%	16.9%	14.1%	2.3%	1293
Tunja	55.7%	29.1%	9.1%	4.6%	1.5%	1434
Turbo	43.5%	24.6%	18.1%	12.3%	1.5%	1310
Uribia	49.2%	23.8%	15.1%	11.3%	0.6%	311
Valle del Cauca	50.6%	26.3%	13.0%	8.2%	1.8%	5857
Valledupar	49.8%	26.4%	13.3%	8.4%	2.2%	3720
Vaupés	46.7%	22.1%	15.4%	15.4%	0.4%	240
Vichada	53.8%	24.4%	10.4%	9.7%	1.6%	431
Villavicencio	53.2%	26.0%	13.1%	5.9%	1.7%	3818
Yopal	57.4%	24.8%	10.9%	5.7%	1.2%	1379

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Yumbo	53.5%	26.7%	12.3%	6.5%	1.1%	930
Zipaquirá	57.2%	26.1%	10.5%	5.6%	0.6%	1081
Colombia	50.0%	27.6%	12.8%	7.7%	1.8%	346978

*Es posible que los porcentajes mostrados no sumen exactamente 100 debido a aproximaciones decimales.

• Pregunta 22.

La tabla muestra el costo de impresión por cada hoja en una papelería.

Precio en pesos de cada hoja impresa		
Cantidad	**Blanco y negro**	**Color**
Menos de 80 hojas	$60	$120
Entre 80 y 200 hojas	$50	$60
Más de 200 hojas	$30	$50

Tabla

Un cliente imprimió x hojas en blanco y negro (B/N) y z hojas en color. Si el precio que pagó se calculó usando la expresión $60x + 50z$, es correcto afirmar, sobre el número de hojas que imprimió que estas son

A. menos de 80 en B/N y entre 80 y 200 en color
B. menos de 80 en B/N y más de 200 en color.
C. entre 80 y 200 en B/N y más de 200 en color.
D. entre 80 y 200 en B/N y entre 80 y 200 en color.

• Estructura

Competencia	Razonamiento
Componente	Numérico - variacional
Afirmación	Interpretar y usar expresiones algebraicas equivalentes.
Nivel de desempeño	Avanzado
Respuesta Correcta	B

• Resultados a nivel nacional y de Entidad Territorial certificada (ETC)

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Amazonas	21.5%	29.2%	27.6%	19.3%	2.4%	503
Antioquia	23.8%	30.7%	25.6%	18.5%	1.5%	15846
Apartadó	24.1%	28.5%	28.5%	16.9%	2.0%	961
Arauca	26.0%	32.3%	22.7%	18.4%	0.6%	1698
Armenia	24.0%	32.4%	24.3%	18.0%	1.3%	2087
Atlántico	23.1%	30.7%	25.8%	18.3%	2.1%	4931
Barrancabermeja	22.4%	35.5%	23.3%	16.2%	2.6%	1556
Barranquilla	24.2%	36.2%	22.6%	15.5%	1.4%	9853
Bello	25.3%	34.3%	21.2%	18.4%	0.8%	3014

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Bogotá, D.C.	23.9%	38.1%	21.0%	15.8%	1.2%	56273
Bolívar	22.9%	28.6%	28.1%	18.4%	2.0%	7349
Boyacá	24.3%	33.3%	24.1%	17.8%	0.4%	6707
Bucaramanga	23.3%	40.2%	20.0%	15.5%	0.9%	3786
Buenaventura	25.3%	28.9%	25.3%	19.1%	1.4%	2444
Buga	23.4%	36.4%	21.5%	17.8%	0.9%	701
Caldas	25.7%	29.4%	25.1%	19.0%	0.8%	3575
Cali	23.6%	35.1%	23.1%	16.7%	1.6%	15344
Caquetá	22.1%	32.5%	24.6%	17.9%	2.8%	1555
Cartagena	23.9%	34.0%	24.6%	16.0%	1.5%	8278
Cartago	25.2%	34.1%	22.8%	17.2%	0.7%	1046
Casanare	23.0%	34.9%	24.0%	17.6%	0.5%	2174
Cauca	24.4%	31.1%	25.9%	17.3%	1.3%	7501
Cesar	23.4%	30.5%	25.5%	19.4%	1.3%	4683
Chocó	20.0%	29.1%	28.8%	21.0%	1.1%	1701
Chía	22.6%	41.3%	18.8%	16.5%	0.8%	1323
Ciénaga	23.5%	32.6%	26.1%	15.7%	2.0%	1054
Cundinamarca	24.5%	35.5%	22.4%	16.9%	0.7%	12603
Córdoba	23.0%	29.5%	27.7%	18.5%	1.3%	8936
Cúcuta	24.7%	37.2%	22.2%	15.0%	0.9%	5698
Dosquebradas	25.9%	35.7%	21.5%	16.4%	0.5%	1210
Duitama	20.9%	42.0%	23.5%	13.4%	0.2%	1081
Envigado	21.5%	42.2%	20.2%	14.4%	1.6%	1300
Facatativá	26.0%	37.8%	20.3%	14.8%	1.1%	972
Florencia	25.2%	31.5%	24.0%	18.2%	1.2%	1290
Floridablanca	22.6%	41.7%	18.7%	16.3%	0.6%	1735
Fusagasugá	24.2%	35.9%	19.7%	18.7%	1.6%	889
Girardot	23.9%	34.7%	25.9%	14.9%	0.7%	753
Girón	26.2%	34.8%	22.2%	16.4%	0.6%	1082
Guainía	18.3%	35.7%	26.3%	18.3%	1.4%	213
Guaviare	21.5%	31.8%	25.5%	19.6%	1.6%	638
Huila	24.7%	31.5%	24.9%	17.8%	1.0%	4868
Ibagué	23.6%	36.3%	21.7%	17.4%	1.1%	4262
Ipiales	23.7%	36.8%	22.7%	15.8%	1.0%	886
Itagüí	23.9%	33.0%	24.7%	17.3%	1.1%	1396
Jamundí	23.9%	34.3%	24.6%	15.7%	1.5%	871
La Guajira	23.6%	30.1%	26.6%	18.6%	1.2%	2123
Lorica	23.9%	24.3%	28.9%	21.4%	1.4%	1138
Magangué	24.1%	26.1%	28.3%	20.6%	1.0%	938

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Magdalena	23.5%	30.0%	27.9%	17.2%	1.4%	5493
Maicao	22.9%	31.1%	25.9%	18.7%	1.5%	1232
Malambo	19.3%	37.7%	24.1%	17.3%	1.5%	647
Manizales	24.3%	33.0%	24.2%	17.6%	0.8%	2359
Medellín	24.0%	33.3%	23.5%	17.5%	1.8%	14697
Meta	24.0%	34.7%	24.1%	16.7%	0.6%	3749
Montería	24.1%	31.5%	26.0%	17.3%	1.1%	3472
Mosquera	22.8%	39.5%	20.7%	16.1%	0.9%	1038
Nariño	24.6%	32.2%	23.2%	17.6%	2.4%	5697
Neiva	24.7%	34.3%	22.8%	16.7%	1.5%	2661
Norte de Santander	23.7%	34.6%	24.1%	16.5%	1.1%	4832
Palmira	25.1%	36.2%	21.6%	16.0%	1.0%	2076
Pasto	24.0%	35.5%	22.4%	17.0%	1.1%	2821
Pereira	23.7%	34.6%	23.3%	17.0%	1.4%	3216
Piedecuesta	23.6%	37.0%	20.5%	17.6%	1.3%	967
Pitalito	24.0%	34.7%	24.1%	16.5%	0.8%	1014
Popayán	23.3%	33.9%	23.2%	17.6%	2.0%	2142
Putumayo	24.1%	32.7%	24.0%	17.7%	1.5%	2550
Quibdó	24.5%	27.3%	25.7%	19.3%	3.2%	1070
Quindío	26.4%	29.8%	25.7%	16.5%	1.6%	1677
Riohacha	25.6%	30.4%	25.5%	17.0%	1.5%	1338
Rionegro	22.4%	34.5%	21.8%	19.6%	1.8%	908
Risaralda	24.2%	28.9%	26.1%	19.0%	1.8%	1802
Sabaneta	20.2%	42.7%	16.8%	14.9%	5.3%	475
Sahagún	24.1%	27.7%	24.7%	22.6%	0.9%	976
San Andrés	20.0%	32.4%	29.3%	17.6%	0.7%	420
Santa Marta	24.0%	33.1%	24.8%	16.4%	1.8%	4382
Santander	24.4%	33.8%	23.1%	17.9%	0.8%	5408
Sincelejo	26.1%	31.8%	25.3%	15.6%	1.2%	2438
Soacha	24.5%	36.1%	22.0%	16.3%	1.1%	4454
Sogamoso	23.6%	40.5%	21.2%	14.4%	0.3%	1174
Soledad	23.6%	36.7%	23.3%	14.5%	1.9%	3697
Sucre	22.5%	28.3%	28.7%	19.5%	1.0%	5380
Tolima	24.8%	30.9%	25.9%	17.4%	0.9%	6451
Tuluá	22.6%	35.1%	24.1%	17.3%	0.8%	1636
Tumaco	23.6%	26.7%	27.3%	20.5%	1.9%	1293
Tunja	25.8%	38.9%	18.5%	16.2%	0.5%	1434
Turbo	24.2%	28.7%	24.7%	20.8%	1.5%	1310
Uribia	23.5%	26.7%	31.5%	18.0%	0.3%	311

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Valle del Cauca	26.0%	31.6%	24.3%	16.9%	1.3%	5857
Valledupar	23.8%	33.2%	23.4%	18.0%	1.6%	3720
Vaupés	22.5%	22.5%	31.7%	22.9%	0.4%	240
Vichada	22.0%	28.5%	30.2%	18.6%	0.7%	431
Villavicencio	22.7%	39.8%	20.5%	15.9%	1.2%	3818
Yopal	24.2%	36.0%	22.0%	17.3%	0.5%	1379
Yumbo	25.4%	30.9%	22.2%	20.6%	1.0%	930
Zipaquirá	23.2%	38.1%	22.3%	16.2%	0.2%	1081
Colombia	23.9%	34.0%	23.7%	17.1%	1.3%	346978

*Es posible que los porcentajes mostrados no sumen exactamente 100 debido a aproximaciones decimales.

• Pregunta 23.

En un concesionario de autos se utiliza la expresión algebraica $V = P - 1.400.000x$ para determinar, con base en el valor inicial P de un carro, su valor después de x años en el mercado. ¿Cuál de las siguientes tablas muestra el valor de un carro con valor inicial P = 20.300.000 durante los primeros 3 años en el mercado?

A.

Año	Valor (V)
1	18.900.000
2	18.500.000
3	18.100.000

B.

Año	Valor (V)
1	19.300.000
2	18.300.000
3	17.300.000

C.

Año	Valor (V)
1	20.160.000
2	20.020.000
3	19.880.000

D.

Año	Valor (V)
1	18.900.000
2	17.500.000
3	16.100.000

• Estructura

Competencia	Comunicación
Componente	Numérico - variacional
Afirmación	Usar y relacionar diferentes representaciones para modelar situaciones de variación.
Nivel de desempeño	Avanzado
Respuesta Correcta	D

• Resultados a nivel nacional y de Entidad Territorial certificada (ETC)

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Amazonas	14.3%	18.3%	49.1%	15.7%	2.6%	503
Antioquia	17.6%	22.4%	35.1%	23.5%	1.5%	15846
Apartadó	21.9%	22.2%	34.1%	20.3%	1.6%	961
Arauca	16.9%	23.6%	34.2%	24.6%	0.6%	1698
Armenia	17.2%	21.5%	31.6%	28.7%	1.0%	2087
Atlántico	18.2%	21.7%	34.3%	24.2%	1.7%	4931
Barrancabermeja	16.5%	21.9%	29.8%	29.6%	2.2%	1556

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Barranquilla	17.1%	20.2%	31.9%	29.3%	1.6%	9853
Bello	16.8%	21.9%	31.2%	29.1%	1.1%	3014
Bogotá, D.C.	14.9%	19.9%	30.4%	33.6%	1.3%	56273
Bolívar	19.7%	22.9%	34.6%	20.7%	2.1%	7349
Boyacá	14.1%	20.9%	36.2%	28.3%	0.5%	6707
Bucaramanga	14.2%	19.4%	29.3%	35.9%	1.2%	3786
Buenaventura	17.7%	21.8%	37.6%	21.3%	1.6%	2444
Buga	16.7%	21.7%	31.2%	29.2%	1.1%	701
Caldas	15.8%	21.6%	38.7%	23.4%	0.5%	3575
Cali	16.8%	20.7%	31.1%	29.8%	1.6%	15344
Caquetá	15.9%	22.3%	37.0%	21.6%	3.2%	1555
Cartagena	20.8%	21.6%	30.3%	25.7%	1.7%	8278
Cartago	15.5%	22.0%	34.1%	27.6%	0.8%	1046
Casanare	15.2%	22.8%	37.2%	23.9%	0.8%	2174
Cauca	16.3%	20.4%	39.6%	22.7%	1.1%	7501
Cesar	18.3%	21.3%	34.9%	24.3%	1.2%	4683
Chocó	18.5%	22.0%	37.2%	21.0%	1.2%	1701
Chía	11.9%	19.3%	30.1%	37.9%	0.8%	1323
Ciénaga	17.6%	23.0%	34.2%	23.9%	1.3%	1054
Cundinamarca	14.5%	20.9%	33.6%	30.2%	0.8%	12603
Córdoba	18.5%	22.6%	37.5%	20.2%	1.2%	8936
Cúcuta	15.5%	19.8%	32.6%	31.2%	0.9%	5698
Dosquebradas	16.5%	20.2%	36.4%	25.8%	1.1%	1210
Duitama	12.8%	18.1%	27.3%	41.2%	0.6%	1081
Envigado	17.2%	16.5%	24.3%	40.6%	1.5%	1300
Facatativá	14.1%	16.8%	35.2%	32.8%	1.1%	972
Florencia	16.4%	21.3%	36.4%	24.2%	1.7%	1290
Floridablanca	14.6%	19.8%	27.6%	37.5%	0.5%	1735
Fusagasugá	15.9%	18.4%	33.7%	29.7%	2.2%	889
Girardot	17.7%	25.0%	36.0%	20.8%	0.5%	753
Girón	16.1%	21.0%	33.6%	28.5%	0.8%	1082
Guainía	16.0%	22.1%	36.2%	23.5%	2.3%	213
Guaviare	15.2%	20.2%	42.3%	20.5%	1.7%	638
Huila	14.9%	22.1%	37.9%	24.0%	1.0%	4868
Ibagué	16.6%	20.4%	32.2%	29.8%	1.1%	4262
Ipiales	15.2%	23.7%	28.7%	31.2%	1.2%	886
Itagüí	22.1%	22.1%	28.7%	25.9%	1.2%	1396
Jamundí	17.7%	21.5%	33.6%	25.5%	1.7%	871
La Guajira	17.6%	23.9%	35.2%	22.3%	1.0%	2123

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Lorica	21.7%	20.0%	38.6%	18.9%	0.8%	1138
Magangué	20.5%	21.4%	36.6%	20.0%	1.5%	938
Magdalena	19.2%	20.8%	38.1%	20.6%	1.3%	5493
Maicao	18.6%	22.5%	35.6%	21.7%	1.6%	1232
Malambo	19.2%	19.9%	28.7%	31.7%	0.5%	647
Manizales	16.1%	20.6%	36.4%	26.2%	0.6%	2359
Medellín	18.2%	21.9%	31.4%	26.9%	1.6%	14697
Meta	17.0%	21.8%	34.5%	25.9%	0.8%	3749
Montería	20.2%	21.6%	33.9%	23.3%	1.0%	3472
Mosquera	13.2%	20.8%	32.7%	32.5%	0.9%	1038
Nariño	16.1%	19.3%	34.2%	27.9%	2.5%	5697
Neiva	14.8%	19.7%	32.2%	32.0%	1.3%	2661
Norte de Santander	16.3%	20.6%	34.6%	27.5%	1.1%	4832
Palmira	14.4%	19.7%	33.9%	31.0%	1.0%	2076
Pasto	14.5%	21.4%	31.4%	32.0%	0.7%	2821
Pereira	15.9%	21.5%	33.8%	27.2%	1.6%	3216
Piedecuesta	13.7%	20.2%	29.2%	35.6%	1.4%	967
Pitalito	14.0%	22.5%	33.4%	29.4%	0.7%	1014
Popayán	16.2%	20.3%	34.5%	27.3%	1.7%	2142
Putumayo	15.4%	22.1%	37.0%	24.1%	1.4%	2550
Quibdó	19.2%	20.3%	40.3%	17.3%	3.0%	1070
Quindío	15.2%	22.4%	36.7%	24.5%	1.1%	1677
Riohacha	18.3%	19.7%	33.5%	26.5%	2.1%	1338
Rionegro	15.6%	19.5%	31.3%	32.3%	1.3%	908
Risaralda	17.3%	22.8%	38.3%	19.9%	1.7%	1802
Sabaneta	14.1%	21.5%	24.0%	33.7%	6.7%	475
Sahagún	17.1%	24.3%	33.4%	24.9%	0.3%	976
San Andrés	22.4%	21.4%	36.0%	19.3%	1.0%	420
Santa Marta	16.5%	22.1%	34.4%	25.6%	1.4%	4382
Santander	14.8%	21.1%	33.2%	30.0%	0.8%	5408
Sincelejo	16.0%	22.7%	34.7%	25.8%	0.9%	2438
Soacha	17.2%	21.8%	34.4%	25.6%	0.9%	4454
Sogamoso	13.6%	18.8%	34.9%	32.0%	0.6%	1174
Soledad	18.7%	19.9%	29.4%	30.0%	2.0%	3697
Sucre	18.6%	23.8%	37.2%	19.6%	0.9%	5380
Tolima	16.2%	21.3%	39.3%	22.3%	0.9%	6451
Tuluá	15.7%	19.6%	35.3%	28.8%	0.6%	1636
Tumaco	18.3%	22.2%	37.7%	20.0%	1.8%	1293
Tunja	12.6%	21.1%	28.7%	37.2%	0.4%	1434

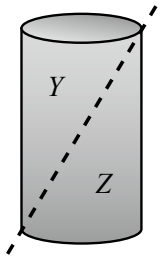
Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Turbo	17.6%	22.4%	39.3%	20.1%	0.7%	1310
Uribia	13.5%	26.0%	43.4%	16.7%	0.3%	311
Valle del Cauca	16.6%	23.0%	36.0%	22.9%	1.4%	5857
Valledupar	18.8%	22.0%	30.7%	27.2%	1.3%	3720
Vaupés	12.1%	21.7%	46.3%	18.3%	1.7%	240
Vichada	14.4%	19.0%	41.8%	23.9%	0.9%	431
Villavicencio	15.8%	19.6%	30.8%	32.7%	1.1%	3818
Yopal	16.2%	19.6%	32.8%	30.8%	0.6%	1379
Yumbo	16.9%	21.9%	35.4%	24.9%	0.9%	930
Zipaquirá	15.1%	20.3%	32.8%	31.5%	0.3%	1081
Colombia	16.5%	21.1%	33.5%	27.6%	1.3%	346978

*Es posible que los porcentajes mostrados no sumen exactamente 100 debido a aproximaciones decimales.

• Pregunta 24.

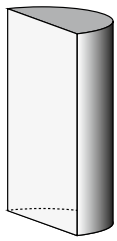
Una máquina que realiza cortes precisos para maquetas especializadas de diseño industrial, cortó un cilindro por la mitad diagonalmente (ver figura).



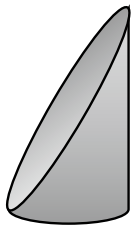
Figura

El cilindro quedó dividido en dos partes. ¿Cuál de los siguientes sólidos corresponde a la parte Z del cilindro?

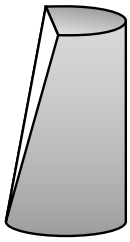
A.



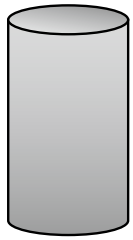
B.



C.



D.



• Estructura

Competencia	Comunicación
Componente	Espacial - métrico
Afirmación	Representar y describir propiedades de objetos tridimensionales desde diferentes posiciones y vistas.
Nivel de desempeño	Mínimo
Respuesta Correcta	B

- **Resultados a nivel nacional y de Entidad Territorial certificada (ETC)**

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Amazonas	3.4%	85.7%	3.8%	5.4%	1.8%	503
Antioquia	4.7%	84.2%	6.6%	3.4%	1.2%	15846
Apartadó	5.7%	80.0%	8.2%	4.2%	1.9%	961
Arauca	3.1%	90.4%	4.1%	1.6%	0.8%	1698
Armenia	5.2%	83.4%	6.7%	3.6%	1.1%	2087
Atlántico	5.1%	80.7%	8.0%	4.6%	1.6%	4931
Barrancabermeja	4.4%	82.8%	7.7%	3.1%	1.9%	1556
Barranquilla	4.2%	85.8%	6.0%	2.8%	1.1%	9853
Bello	4.5%	85.2%	6.6%	2.7%	0.9%	3014
Bogotá, D.C.	3.1%	89.4%	4.7%	1.9%	0.7%	56273
Bolívar	5.7%	79.6%	8.8%	4.2%	1.8%	7349
Boyacá	3.3%	89.7%	5.1%	1.6%	0.3%	6707
Bucaramanga	3.1%	90.3%	4.5%	1.8%	0.4%	3786
Buenaventura	5.6%	81.0%	8.0%	4.4%	0.9%	2444
Buga	4.9%	84.9%	6.1%	3.3%	0.9%	701
Caldas	3.5%	88.5%	5.1%	2.5%	0.3%	3575
Cali	4.6%	85.6%	6.3%	2.6%	1.0%	15344
Caquetá	3.0%	85.5%	6.8%	2.2%	2.5%	1555
Cartagena	5.7%	80.9%	8.3%	3.9%	1.3%	8278
Cartago	4.4%	88.0%	4.1%	2.8%	0.7%	1046
Casanare	2.9%	90.4%	4.8%	1.6%	0.3%	2174
Cauca	4.3%	85.3%	6.2%	3.1%	1.0%	7501
Cesar	5.8%	80.6%	8.3%	4.1%	1.2%	4683
Chocó	7.9%	73.6%	10.1%	7.1%	1.3%	1701
Chía	2.5%	92.4%	3.3%	1.6%	0.2%	1323
Ciénaga	5.8%	79.8%	8.2%	4.1%	2.2%	1054
Cundinamarca	2.8%	90.4%	4.7%	1.7%	0.4%	12603
Córdoba	5.3%	81.6%	8.1%	3.8%	1.2%	8936
Cúcuta	3.5%	90.4%	4.2%	1.6%	0.4%	5698
Dosquebradas	2.0%	91.1%	4.0%	2.4%	0.5%	1210
Duitama	2.6%	92.6%	3.9%	0.8%	0.1%	1081
Envigado	4.3%	87.4%	4.7%	2.6%	1.0%	1300
Facatativá	2.1%	92.1%	3.6%	1.2%	1.0%	972
Florencia	3.5%	89.0%	4.4%	2.1%	1.0%	1290
Floridablanca	2.6%	91.4%	3.5%	2.2%	0.3%	1735
Fusagasugá	2.9%	88.4%	4.9%	2.0%	1.7%	889
Girardot	6.2%	84.1%	5.7%	3.3%	0.7%	753

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Girón	3.5%	89.6%	5.5%	1.2%	0.2%	1082
Guainía	1.4%	88.3%	6.6%	2.3%	1.4%	213
Guaviare	4.1%	84.8%	7.1%	2.2%	1.9%	638
Huila	2.7%	90.1%	4.7%	1.7%	0.7%	4868
Ibagué	3.8%	88.5%	4.8%	2.1%	0.8%	4262
Ipiales	3.0%	90.2%	4.2%	2.1%	0.5%	886
Itagüí	6.7%	76.6%	10.7%	4.8%	1.2%	1396
Jamundí	4.1%	85.6%	6.8%	2.6%	0.8%	871
La Guajira	6.3%	81.5%	8.3%	3.2%	0.8%	2123
Lorica	5.2%	78.2%	9.8%	5.6%	1.2%	1138
Magangué	4.6%	84.2%	6.2%	4.2%	0.9%	938
Magdalena	5.0%	83.0%	6.8%	4.1%	1.2%	5493
Maicao	5.5%	82.1%	7.5%	3.9%	1.0%	1232
Malambo	4.6%	83.8%	6.6%	4.3%	0.6%	647
Manizales	3.4%	89.2%	4.7%	2.2%	0.4%	2359
Medellín	5.5%	82.0%	7.3%	3.7%	1.4%	14697
Meta	3.7%	87.4%	5.9%	2.4%	0.6%	3749
Montería	5.2%	83.2%	6.9%	3.7%	1.0%	3472
Mosquera	2.9%	91.5%	3.8%	1.5%	0.3%	1038
Nariño	2.9%	88.3%	4.9%	2.0%	1.8%	5697
Neiva	2.9%	90.0%	4.0%	1.9%	1.2%	2661
Norte de Santander	2.9%	89.2%	5.1%	2.1%	0.7%	4832
Palmira	3.7%	88.9%	4.6%	2.3%	0.5%	2076
Pasto	2.5%	91.1%	4.1%	1.6%	0.6%	2821
Pereira	3.8%	87.9%	5.0%	2.1%	1.2%	3216
Piedecuesta	3.1%	88.9%	5.1%	2.1%	0.8%	967
Pitalito	2.4%	91.7%	4.1%	1.0%	0.8%	1014
Popayán	3.3%	89.1%	5.2%	1.7%	0.7%	2142
Putumayo	3.4%	87.3%	5.8%	2.5%	1.1%	2550
Quibdó	5.6%	77.0%	8.5%	5.7%	3.2%	1070
Quindío	3.5%	87.8%	4.5%	2.9%	1.4%	1677
Riohacha	5.3%	82.0%	8.4%	2.9%	1.3%	1338
Rionegro	3.6%	88.3%	4.8%	2.0%	1.2%	908
Risaralda	3.5%	85.8%	6.4%	2.7%	1.6%	1802
Sabaneta	2.9%	85.7%	5.1%	1.1%	5.3%	475
Sahagún	4.2%	86.3%	6.9%	2.4%	0.3%	976
San Andrés	5.7%	79.8%	9.3%	4.0%	1.2%	420
Santa Marta	5.0%	83.3%	6.8%	3.6%	1.3%	4382
Santander	2.9%	90.7%	4.4%	1.6%	0.5%	5408

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Sincelejo	5.1%	86.3%	5.2%	2.5%	0.9%	2438
Soacha	3.5%	87.8%	5.5%	2.3%	0.8%	4454
Sogamoso	1.5%	93.9%	3.4%	0.9%	0.3%	1174
Soledad	4.7%	83.6%	6.9%	3.1%	1.6%	3697
Sucre	4.7%	83.1%	7.5%	4.0%	0.8%	5380
Tolima	3.8%	86.5%	6.2%	2.8%	0.7%	6451
Tuluá	4.3%	88.0%	5.1%	2.2%	0.3%	1636
Tumaco	5.5%	80.3%	7.1%	5.6%	1.5%	1293
Tunja	2.4%	92.5%	2.6%	2.2%	0.3%	1434
Turbo	6.3%	81.9%	7.7%	3.2%	0.8%	1310
Uribia	4.5%	79.7%	6.8%	8.4%	0.6%	311
Valle del Cauca	4.1%	85.0%	7.1%	2.9%	0.9%	5857
Valledupar	4.7%	83.3%	7.4%	3.3%	1.3%	3720
Vaupés	4.6%	84.6%	5.8%	5.0%	0.0%	240
Vichada	3.2%	87.0%	6.5%	2.8%	0.5%	431
Villavicencio	3.5%	88.2%	5.3%	2.1%	1.0%	3818
Yopal	2.9%	92.0%	3.5%	1.5%	0.1%	1379
Yumbo	3.5%	88.5%	4.9%	2.6%	0.4%	930
Zipaquirá	2.1%	92.4%	4.1%	1.4%	0.0%	1081
Colombia	4.0%	86.4%	5.9%	2.7%	0.9%	346978

*Es posible que los porcentajes mostrados no sumen exactamente 100 debido a aproximaciones decimales.

• Pregunta 25.

Un hombre tiene plantado en su jardín un árbol de 15 metros de altura que justo a las 4 de la tarde proyecta una sombra de 24 metros de longitud. Debido a que esta sombra no alcanza a cubrir todo el jardín, decide plantar junto a él otro árbol de 10 metros de altura; al otro día, a las 4 de la tarde hace la medición de la sombra del nuevo árbol. El valor obtenido en la medición debe ser

A. 16 metros.

B. 24 metros.

C. 26 metros.

D. 36 metros.

• Estructura

Competencia	Resolución
Componente	Espacial - métrico
Afirmación	Resolver y formular problemas usando modelos geométricos.
Nivel de desempeño	Satisfactorio
Respuesta Correcta	A

• Resultados a nivel nacional y de Entidad Territorial certificada (ETC)

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Amazonas	38.8%	16.9%	16.7%	25.6%	2.0%	503
Antioquia	48.1%	18.0%	13.4%	19.3%	1.3%	15846
Apartadó	47.5%	18.6%	14.3%	17.7%	2.0%	961
Arauca	54.8%	15.5%	11.4%	17.6%	0.6%	1698
Armenia	49.8%	19.7%	12.4%	17.1%	1.0%	2087
Atlántico	42.4%	19.8%	15.1%	21.3%	1.4%	4931
Barrancabermeja	49.7%	18.2%	12.9%	17.3%	1.9%	1556
Barranquilla	50.7%	17.2%	13.0%	17.8%	1.3%	9853
Bello	53.3%	16.4%	13.5%	15.9%	0.9%	3014
Bogotá, D.C.	55.2%	15.4%	12.9%	15.4%	1.0%	56273
Bolívar	40.6%	20.0%	13.9%	23.7%	1.8%	7349
Boyacá	55.0%	15.4%	11.8%	17.4%	0.4%	6707

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Bucaramanga	57.8%	14.4%	11.0%	16.2%	0.5%	3786
Buenaventura	39.2%	21.2%	15.4%	23.2%	1.1%	2444
Buga	52.2%	15.8%	13.4%	17.8%	0.7%	701
Caldas	48.4%	18.7%	12.9%	19.6%	0.4%	3575
Cali	51.8%	17.4%	13.0%	16.5%	1.3%	15344
Caquetá	46.3%	18.0%	13.2%	19.7%	2.7%	1555
Cartagena	45.0%	19.3%	14.7%	19.8%	1.2%	8278
Cartago	55.0%	15.4%	13.8%	15.3%	0.6%	1046
Casanare	51.7%	17.1%	13.1%	17.8%	0.4%	2174
Cauca	44.2%	20.7%	13.9%	20.4%	0.9%	7501
Cesar	45.7%	19.1%	13.7%	20.5%	0.9%	4683
Chocó	38.4%	24.9%	13.1%	22.3%	1.3%	1701
Chía	60.5%	14.5%	10.8%	13.7%	0.5%	1323
Ciénaga	37.8%	23.7%	13.4%	22.5%	2.7%	1054
Cundinamarca	54.4%	15.8%	12.8%	16.3%	0.7%	12603
Córdoba	42.2%	20.1%	15.3%	21.2%	1.2%	8936
Cúcuta	55.5%	15.2%	11.9%	16.8%	0.6%	5698
Dosquebradas	53.9%	13.7%	14.4%	17.9%	0.2%	1210
Duitama	61.0%	12.7%	10.6%	15.6%	0.1%	1081
Envigado	58.8%	14.1%	11.6%	14.4%	1.2%	1300
Facatativá	57.0%	16.7%	11.8%	13.6%	0.9%	972
Florencia	49.3%	15.4%	15.1%	19.0%	1.2%	1290
Floridablanca	59.1%	13.4%	12.7%	14.5%	0.3%	1735
Fusagasugá	55.3%	16.2%	11.7%	15.2%	1.6%	889
Girardot	46.9%	19.5%	17.0%	15.8%	0.8%	753
Girón	53.0%	17.3%	11.6%	17.7%	0.5%	1082
Guainía	40.8%	21.1%	14.1%	23.5%	0.5%	213
Guaviare	47.6%	20.1%	13.6%	17.2%	1.4%	638
Huila	51.4%	17.0%	13.5%	17.3%	0.8%	4868
Ibagué	51.1%	17.3%	13.5%	17.0%	1.1%	4262
Ipiales	57.6%	14.3%	12.2%	15.1%	0.8%	886
Itagüí	47.9%	20.8%	14.2%	16.4%	0.7%	1396
Jamundí	46.5%	18.0%	13.7%	20.8%	1.0%	871
La Guajira	39.8%	21.3%	13.9%	24.4%	0.6%	2123
Lorica	37.9%	21.3%	15.4%	24.4%	1.1%	1138
Magangué	44.5%	17.6%	14.8%	22.4%	0.7%	938
Magdalena	41.3%	21.5%	13.7%	22.3%	1.1%	5493
Maicao	40.6%	21.2%	12.9%	24.5%	0.8%	1232
Malambo	49.3%	17.9%	13.1%	19.3%	0.3%	647

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Manizales	52.4%	16.4%	13.7%	16.9%	0.6%	2359
Medellín	49.8%	17.4%	14.0%	17.2%	1.6%	14697
Meta	51.5%	16.6%	11.7%	19.6%	0.7%	3749
Montería	46.6%	18.5%	13.7%	20.2%	1.0%	3472
Mosquera	57.1%	16.0%	12.0%	14.3%	0.6%	1038
Nariño	50.4%	16.7%	12.7%	18.2%	2.0%	5697
Neiva	52.6%	16.5%	12.4%	17.2%	1.4%	2661
Norte de Santander	52.3%	16.2%	12.3%	18.5%	0.8%	4832
Palmira	53.1%	16.3%	12.7%	17.2%	0.7%	2076
Pasto	57.1%	15.3%	11.1%	15.9%	0.6%	2821
Pereira	51.4%	17.7%	13.7%	16.0%	1.2%	3216
Piedecuesta	55.7%	15.5%	12.9%	14.9%	0.9%	967
Pitalito	51.1%	14.7%	15.1%	18.4%	0.7%	1014
Popayán	53.5%	16.7%	12.2%	16.4%	1.3%	2142
Putumayo	48.4%	17.6%	13.6%	19.2%	1.3%	2550
Quibdó	35.7%	20.6%	17.1%	23.3%	3.4%	1070
Quindío	48.4%	17.5%	14.1%	18.7%	1.2%	1677
Riohacha	44.5%	19.6%	13.7%	20.6%	1.6%	1338
Rionegro	54.5%	14.2%	12.8%	17.5%	1.0%	908
Risaralda	49.3%	20.0%	12.1%	16.8%	1.8%	1802
Sabaneta	60.2%	12.8%	10.9%	10.1%	5.9%	475
Sahagún	47.3%	17.3%	13.4%	21.2%	0.7%	976
San Andrés	42.1%	19.5%	13.1%	24.0%	1.2%	420
Santa Marta	46.3%	18.3%	14.6%	19.4%	1.3%	4382
Santander	56.3%	14.6%	12.0%	16.5%	0.6%	5408
Sincelejo	44.2%	18.5%	16.1%	20.3%	0.9%	2438
Soacha	52.2%	17.0%	13.5%	16.4%	0.9%	4454
Sogamoso	59.9%	13.8%	10.1%	15.9%	0.3%	1174
Soledad	49.0%	17.4%	14.0%	17.8%	1.8%	3697
Sucre	39.9%	21.1%	15.1%	23.0%	0.9%	5380
Tolima	47.2%	18.4%	13.5%	20.1%	0.8%	6451
Tuluá	52.2%	16.9%	13.6%	16.9%	0.4%	1636
Tumaco	34.9%	24.8%	15.7%	23.0%	1.6%	1293
Tunja	59.1%	13.4%	13.3%	13.9%	0.3%	1434
Turbo	40.5%	23.0%	14.9%	20.8%	0.8%	1310
Uribia	34.7%	21.5%	18.6%	24.8%	0.3%	311
Valle del Cauca	48.2%	18.4%	14.0%	18.5%	0.9%	5857
Valledupar	48.8%	17.9%	14.1%	18.0%	1.3%	3720
Vaupés	36.3%	23.8%	14.6%	25.4%	0.0%	240

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Vichada	45.5%	19.0%	13.0%	21.3%	1.2%	431
Villavicencio	54.8%	15.9%	12.2%	16.1%	0.9%	3818
Yopal	55.4%	15.2%	11.7%	17.4%	0.3%	1379
Yumbo	50.9%	17.6%	12.5%	18.4%	0.6%	930
Zipaquirá	57.1%	14.6%	14.2%	14.1%	0.0%	1081
Colombia	50.2%	17.4%	13.3%	18.0%	1.1%	346978

*Es posible que los porcentajes mostrados no sumen exactamente 100 debido a aproximaciones decimales.

• Pregunta 26.

La tabla muestra las probabilidades de morir al accidentarse, según el medio de transporte utilizado.

Accidente según medio de transporte	Probabilidad (aproximadamente)
En tren	3 de 460.000
De bus	5 de 520.000
De carro	10 de 2.400
En avión	5 de 25.000

Tabla

Tabla. Tomado y adaptado de: *http://www.nsc.org/news_resources/Documents/nscInjuryFacts2011_037.pdf*

La lista con los medios de transporte ordenados de mayor a menor, de acuerdo con la probabilidad de morir al accidentarse en uno de ellos, es:

A. Tren / bus / avión / carro.

B. Carro / avión / bus / tren.

C. Carro / avión / tren / bus.

D. Tren / bus / carro / avión.

• Estructura

Competencia	Resolución
Componente	Aleatorio
Afirmación	Plantear y resolver situaciones relativas a otras ciencias utilizando conceptos de probabilidad.
Nivel de desempeño	Satisfactorio
Respuesta Correcta	B

- **Resultados a nivel nacional y de Entidad Territorial certificada (ETC)**

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Amazonas	22.1%	30.0%	18.9%	27.0%	2.0%	503
Antioquia	22.4%	43.6%	19.0%	13.7%	1.3%	15846
Apartadó	20.9%	44.5%	19.8%	13.1%	1.7%	961
Arauca	21.9%	50.6%	17.0%	10.0%	0.5%	1698
Armenia	19.3%	48.3%	21.1%	10.6%	0.8%	2087
Atlántico	23.0%	39.0%	19.9%	16.7%	1.4%	4931
Barrancabermeja	20.1%	45.8%	20.1%	12.0%	2.1%	1556
Barranquilla	22.5%	46.5%	19.3%	10.6%	1.1%	9853
Bello	20.7%	49.6%	19.3%	9.7%	0.7%	3014
Bogotá, D.C.	18.9%	50.4%	21.4%	8.5%	0.8%	56273
Bolívar	24.5%	35.3%	19.7%	18.7%	1.8%	7349
Boyacá	23.3%	46.7%	19.0%	10.6%	0.4%	6707
Bucaramanga	18.3%	52.1%	21.6%	7.6%	0.4%	3786
Buenaventura	24.8%	39.9%	16.0%	18.4%	0.9%	2444
Buga	21.7%	47.9%	20.7%	9.0%	0.7%	701
Caldas	24.6%	42.5%	18.3%	14.1%	0.5%	3575
Cali	21.7%	46.4%	20.3%	10.3%	1.2%	15344
Caquetá	25.4%	37.5%	17.6%	16.9%	2.6%	1555
Cartagena	22.4%	42.3%	19.9%	14.0%	1.4%	8278
Cartago	20.6%	47.5%	19.3%	12.0%	0.6%	1046
Casanare	22.7%	46.8%	19.4%	10.7%	0.4%	2174
Cauca	24.5%	38.7%	17.9%	18.0%	1.0%	7501
Cesar	21.2%	41.3%	19.3%	17.1%	1.1%	4683
Chocó	25.0%	33.7%	19.8%	19.8%	1.6%	1701
Chía	15.0%	54.9%	22.2%	7.6%	0.4%	1323
Ciénaga	21.3%	37.7%	20.1%	19.4%	1.4%	1054
Cundinamarca	21.9%	48.4%	19.9%	9.5%	0.4%	12603
Córdoba	23.0%	38.4%	18.6%	18.7%	1.3%	8936
Cúcuta	20.6%	49.2%	20.5%	9.3%	0.4%	5698
Dosquebradas	20.4%	51.1%	20.4%	7.9%	0.2%	1210
Duitama	17.9%	55.3%	20.4%	6.2%	0.2%	1081
Envigado	15.9%	51.3%	24.3%	7.2%	1.3%	1300
Facatativá	20.0%	50.9%	20.3%	8.1%	0.7%	972
Florencia	24.7%	45.4%	16.6%	12.2%	1.0%	1290
Floridablanca	19.0%	52.8%	21.8%	6.0%	0.4%	1735
Fusagasugá	21.7%	48.3%	21.4%	7.0%	1.7%	889
Girardot	22.3%	45.9%	17.9%	13.3%	0.5%	753
Girón	22.3%	47.8%	20.3%	9.1%	0.5%	1082

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Guainía	19.2%	39.9%	16.0%	24.9%	0.0%	213
Guaviare	22.4%	39.8%	19.4%	16.6%	1.7%	638
Huila	24.1%	45.6%	17.4%	12.2%	0.7%	4868
Ibagué	20.9%	47.2%	20.3%	10.6%	1.0%	4262
Ipiales	22.0%	47.9%	19.2%	10.5%	0.5%	886
Itagüí	19.6%	49.2%	20.9%	9.6%	0.7%	1396
Jamundí	25.5%	45.9%	18.5%	9.2%	0.9%	871
La Guajira	25.1%	39.4%	17.6%	17.2%	0.7%	2123
Lorica	24.1%	36.1%	20.1%	18.2%	1.5%	1138
Magangué	24.9%	38.1%	20.5%	15.8%	0.7%	938
Magdalena	23.7%	36.8%	19.3%	18.8%	1.4%	5493
Maicao	22.1%	40.4%	19.5%	16.6%	1.5%	1232
Malambo	23.2%	38.9%	25.7%	11.6%	0.6%	647
Manizales	19.5%	50.8%	20.3%	8.9%	0.5%	2359
Medellín	20.5%	47.9%	20.0%	10.2%	1.5%	14697
Meta	22.2%	45.6%	19.0%	12.6%	0.6%	3749
Montería	22.0%	44.1%	19.9%	12.9%	1.0%	3472
Mosquera	19.0%	51.6%	20.5%	8.4%	0.5%	1038
Nariño	22.3%	44.7%	18.2%	12.8%	2.0%	5697
Neiva	22.1%	48.4%	19.1%	9.4%	1.1%	2661
Norte de Santander	22.3%	45.7%	19.6%	11.6%	0.7%	4832
Palmira	21.7%	48.2%	20.6%	9.1%	0.5%	2076
Pasto	20.5%	50.1%	19.1%	9.7%	0.5%	2821
Pereira	20.2%	47.3%	20.8%	10.6%	1.2%	3216
Piedecuesta	21.0%	50.5%	19.3%	8.5%	0.7%	967
Pitalito	21.8%	51.9%	17.9%	7.7%	0.7%	1014
Popayán	21.7%	48.5%	19.7%	9.0%	1.2%	2142
Putumayo	22.6%	43.8%	19.6%	12.8%	1.1%	2550
Quibdó	23.6%	40.3%	15.5%	16.9%	3.6%	1070
Quindío	21.6%	43.3%	20.5%	13.3%	1.3%	1677
Riohacha	23.9%	41.2%	18.9%	14.1%	1.9%	1338
Rionegro	19.7%	48.3%	22.9%	7.9%	1.1%	908
Risaralda	22.1%	42.8%	19.0%	14.4%	1.7%	1802
Sabaneta	18.5%	47.4%	23.4%	5.5%	5.3%	475
Sahagún	24.9%	39.0%	18.4%	17.0%	0.6%	976
San Andrés	20.7%	44.8%	18.1%	15.5%	1.0%	420
Santa Marta	22.8%	42.4%	19.6%	13.9%	1.3%	4382
Santander	20.7%	48.2%	20.1%	10.3%	0.7%	5408
Sincelejo	24.5%	43.9%	18.9%	11.7%	0.9%	2438

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Soacha	21.8%	48.0%	19.4%	9.9%	0.9%	4454
Sogamoso	18.2%	54.1%	20.2%	7.2%	0.3%	1174
Soledad	22.9%	46.0%	18.2%	11.2%	1.6%	3697
Sucre	24.5%	37.2%	18.9%	18.5%	0.8%	5380
Tolima	24.5%	41.3%	18.3%	15.1%	0.8%	6451
Tuluá	20.8%	48.3%	18.4%	12.2%	0.3%	1636
Tumaco	23.4%	34.1%	19.3%	21.7%	1.5%	1293
Tunja	19.9%	50.4%	21.5%	7.7%	0.3%	1434
Turbo	22.7%	37.3%	19.8%	19.4%	0.8%	1310
Uribia	25.7%	35.4%	13.8%	24.4%	0.6%	311
Valle del Cauca	22.5%	43.9%	19.5%	13.1%	1.0%	5857
Valledupar	22.4%	44.9%	19.8%	11.5%	1.4%	3720
Vaupés	24.2%	24.6%	16.7%	34.2%	0.4%	240
Vichada	23.0%	36.4%	18.1%	21.8%	0.7%	431
Villavicencio	20.2%	51.0%	19.3%	8.8%	0.7%	3818
Yopal	22.6%	50.4%	17.3%	9.5%	0.1%	1379
Yumbo	23.5%	48.1%	16.1%	11.6%	0.6%	930
Zipaquirá	21.6%	52.5%	19.1%	6.8%	0.1%	1081
Colombia	21.6%	45.7%	19.7%	12.0%	1.0%	346978

*Es posible que los porcentajes mostrados no sumen exactamente 100 debido a aproximaciones decimales.

• Pregunta 27.

Se ha encontrado que en un hotel el promedio de personas alojadas según la cantidad de habitaciones ocupadas está dado por la expresión $3x - 2$.

¿Cuál de las siguientes tablas presenta información correcta para algunos valores de esta relación?

A.

Habitaciones	Promedio Personas alojadas
3	7
8	22
12	34
15	43

B.

Personas alojadas	Habitaciones
3	7
8	22
12	34
15	43

C.

Habitaciones	Promedio Personas alojadas
3	11
8	26
12	38
15	47

D.

Personas alojadas	Habitaciones
3	11
8	26
12	38
15	47

• Estructura

Competencia	Comunicación
Componente	Numérico - variacional
Afirmación	Usar y relacionar diferentes representaciones para modelar situaciones de variación.
Nivel de desempeño	Avanzado
Respuesta Correcta	A

- **Resultados a nivel nacional y de Entidad Territorial certificada (ETC)**

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Amazonas	23.7%	29.6%	28.0%	15.7%	3.0%	503
Antioquia	30.0%	27.0%	25.8%	15.5%	1.7%	15846
Apartadó	28.9%	26.8%	27.2%	14.9%	2.2%	961
Arauca	31.6%	28.6%	25.9%	13.0%	0.9%	1698
Armenia	33.9%	25.9%	23.6%	15.2%	1.3%	2087
Atlántico	28.8%	27.9%	25.4%	15.7%	2.2%	4931
Barrancabermeja	34.9%	25.4%	24.6%	12.7%	2.4%	1556
Barranquilla	36.1%	25.8%	22.9%	13.0%	2.1%	9853
Bello	36.3%	25.4%	23.6%	13.4%	1.3%	3014
Bogotá, D.C.	39.1%	25.1%	21.9%	12.3%	1.6%	56273
Bolívar	26.0%	28.8%	25.8%	16.9%	2.6%	7349
Boyacá	33.7%	25.4%	25.2%	15.0%	0.7%	6707
Bucaramanga	40.6%	24.6%	22.1%	11.6%	1.2%	3786
Buenaventura	28.2%	26.6%	26.2%	17.1%	1.9%	2444
Buga	30.8%	25.0%	25.1%	18.0%	1.1%	701
Caldas	28.9%	26.6%	26.7%	16.9%	0.9%	3575
Cali	35.3%	26.6%	23.0%	13.1%	2.0%	15344
Caquetá	27.0%	27.7%	26.8%	15.5%	3.1%	1555
Cartagena	31.6%	27.6%	24.2%	14.5%	2.1%	8278
Cartago	34.0%	26.6%	24.3%	14.1%	1.1%	1046
Casanare	32.8%	28.8%	24.1%	13.4%	0.9%	2174
Cauca	27.8%	28.7%	25.2%	16.6%	1.6%	7501
Cesar	27.9%	27.7%	25.7%	17.2%	1.5%	4683
Chocó	25.2%	28.3%	27.5%	17.2%	1.8%	1701
Chía	41.6%	23.5%	21.2%	12.5%	1.1%	1323
Ciénaga	28.0%	25.5%	27.0%	16.7%	2.8%	1054
Cundinamarca	35.2%	25.7%	23.8%	14.3%	1.1%	12603
Córdoba	28.5%	28.1%	26.1%	15.7%	1.6%	8936
Cúcuta	37.7%	25.3%	23.3%	12.6%	1.1%	5698
Dosquebradas	33.6%	25.3%	25.5%	14.5%	1.2%	1210
Duitama	41.6%	23.3%	23.9%	10.9%	0.3%	1081
Envigado	44.8%	21.4%	19.8%	12.4%	1.6%	1300
Facatativá	36.9%	26.5%	21.6%	13.9%	1.0%	972
Florencia	29.5%	29.6%	25.0%	14.0%	1.9%	1290
Floridablanca	43.7%	24.7%	19.5%	11.2%	0.9%	1735
Fusagasugá	38.2%	22.5%	22.4%	14.4%	2.5%	889
Girardot	33.7%	27.8%	23.6%	14.2%	0.7%	753
Girón	36.1%	28.1%	22.6%	12.0%	1.1%	1082

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Guainía	33.8%	29.6%	21.1%	14.1%	1.4%	213
Guaviare	27.1%	31.3%	24.9%	14.7%	1.9%	638
Huila	29.6%	28.0%	25.7%	15.4%	1.3%	4868
Ibagué	34.3%	25.8%	24.4%	14.3%	1.2%	4262
Ipiales	31.4%	31.5%	22.1%	13.7%	1.4%	886
Itagüí	30.4%	26.4%	25.8%	15.7%	1.8%	1396
Jamundí	29.5%	27.9%	24.9%	16.1%	1.6%	871
La Guajira	29.2%	26.7%	25.4%	17.5%	1.2%	2123
Lorica	27.2%	25.6%	26.9%	18.6%	1.8%	1138
Magangué	28.4%	27.4%	25.6%	17.8%	0.9%	938
Magdalena	26.0%	30.1%	25.4%	16.4%	2.1%	5493
Maicao	26.3%	29.4%	25.3%	17.1%	1.9%	1232
Malambo	37.2%	24.3%	22.7%	14.4%	1.4%	647
Manizales	32.0%	25.1%	26.8%	15.0%	1.1%	2359
Medellín	32.7%	25.6%	24.7%	14.8%	2.1%	14697
Meta	31.6%	25.7%	26.0%	15.4%	1.3%	3749
Montería	33.1%	25.7%	24.6%	15.4%	1.2%	3472
Mosquera	40.8%	25.2%	19.7%	13.0%	1.3%	1038
Nariño	32.8%	27.1%	23.0%	14.3%	2.8%	5697
Neiva	36.2%	25.7%	22.6%	13.8%	1.7%	2661
Norte de Santander	33.5%	26.0%	23.8%	15.5%	1.2%	4832
Palmira	36.6%	26.5%	22.7%	12.7%	1.5%	2076
Pasto	36.5%	25.5%	23.1%	13.6%	1.3%	2821
Pereira	35.0%	25.8%	23.0%	14.3%	1.9%	3216
Piedecuesta	38.8%	23.3%	22.6%	13.8%	1.6%	967
Pitalito	32.3%	28.7%	24.1%	13.9%	1.0%	1014
Popayán	32.5%	26.7%	24.5%	14.1%	2.2%	2142
Putumayo	29.8%	29.1%	24.4%	14.9%	1.9%	2550
Quibdó	26.2%	25.0%	27.3%	17.2%	4.4%	1070
Quindío	32.1%	27.0%	23.9%	15.5%	1.6%	1677
Riohacha	30.4%	28.2%	24.7%	14.4%	2.3%	1338
Rionegro	36.7%	26.3%	21.0%	14.2%	1.8%	908
Risaralda	27.9%	27.2%	25.9%	16.9%	2.2%	1802
Sabaneta	43.4%	22.5%	18.9%	9.5%	5.7%	475
Sahagún	29.8%	28.8%	25.9%	14.4%	1.0%	976
San Andrés	32.4%	24.5%	26.9%	14.3%	1.9%	420
Santa Marta	30.8%	26.9%	24.1%	16.2%	2.0%	4382
Santander	35.4%	25.1%	23.8%	14.6%	1.1%	5408
Sincelejo	33.0%	26.9%	24.0%	14.8%	1.2%	2438

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Soacha	33.4%	26.4%	24.3%	14.5%	1.3%	4454
Sogamoso	41.4%	25.6%	19.9%	12.7%	0.4%	1174
Soledad	34.9%	25.3%	23.9%	13.3%	2.6%	3697
Sucre	28.0%	28.0%	25.7%	16.9%	1.4%	5380
Tolima	28.9%	26.9%	26.7%	16.1%	1.4%	6451
Tuluá	36.7%	24.8%	23.3%	14.6%	0.6%	1636
Tumaco	25.3%	30.2%	25.4%	16.2%	2.9%	1293
Tunja	41.9%	24.7%	20.9%	11.8%	0.8%	1434
Turbo	26.6%	26.6%	26.8%	18.9%	1.1%	1310
Uribia	25.1%	25.7%	32.5%	15.8%	1.0%	311
Valle del Cauca	30.0%	28.6%	24.1%	15.7%	1.7%	5857
Valledupar	32.2%	25.4%	26.1%	14.7%	1.7%	3720
Vaupés	21.7%	30.8%	25.0%	21.7%	0.8%	240
Vichada	29.9%	29.7%	24.4%	14.6%	1.4%	431
Villavicencio	37.5%	25.0%	22.9%	13.2%	1.4%	3818
Yopal	36.1%	26.1%	21.8%	15.4%	0.6%	1379
Yumbo	33.2%	25.7%	26.6%	13.4%	1.1%	930
Zipaquirá	36.7%	26.5%	22.2%	14.0%	0.6%	1081
Colombia	33.5%	26.4%	24.0%	14.4%	1.6%	346978

*Es posible que los porcentajes mostrados no sumen exactamente 100 debido a aproximaciones decimales.

• Pregunta 28.

El profesor de matemáticas escribe en el tablero la siguiente serie de números:

Término	1	2	3	4	5	...
Número	$\frac{1}{3}$	$\frac{2}{9}$	$\frac{4}{27}$	$\frac{8}{81}$	$\frac{16}{243}$	...

El profesor les pide a sus alumnos que describan la manera como varían los números fraccionarios término a término. Una correcta descripción que podrá realizar un estudiante será:

A. Se duplica el numerador y se triplica el denominador, término a término.
B. Se duplican numerador y denominador, término a término.
C. Se triplican numerador y denominador, término a término.
D. Se suma uno al numerador y seis al denominador, termino a término.

• Estructura

Competencia	Razonamiento
Componente	Numérico - variacional
Afirmación	Identificar y describir las relaciones (aditivas, multiplicativas, de recurrencia…) que se pueden establecer en una secuencia numérica.
Nivel de desempeño	Satisfactorio
Respuesta Correcta	A

• Resultados a nivel nacional y de Entidad Territorial certificada (ETC)

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Amazonas	30.2%	24.1%	19.9%	23.5%	2.4%	503
Antioquia	43.0%	23.7%	16.2%	15.4%	1.7%	15846
Apartadó	38.8%	24.9%	18.9%	15.4%	2.0%	961
Arauca	45.2%	24.0%	17.0%	13.1%	0.8%	1698
Armenia	47.4%	20.9%	17.6%	13.0%	1.1%	2087
Atlántico	38.6%	23.3%	17.6%	18.6%	2.0%	4931
Barrancabermeja	46.9%	21.5%	15.1%	14.0%	2.5%	1556
Barranquilla	49.3%	20.8%	15.0%	13.3%	1.5%	9853
Bello	52.5%	20.7%	13.6%	12.2%	1.1%	3014

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Bogotá, D.C.	56.6%	19.1%	13.2%	9.8%	1.3%	56273
Bolívar	35.2%	24.2%	17.8%	20.5%	2.3%	7349
Boyacá	50.1%	21.6%	15.3%	12.6%	0.5%	6707
Bucaramanga	59.2%	18.8%	12.4%	8.8%	0.8%	3786
Buenaventura	35.9%	24.0%	19.0%	19.2%	1.8%	2444
Buga	46.6%	23.3%	17.3%	11.7%	1.1%	701
Caldas	43.4%	25.7%	17.0%	13.4%	0.6%	3575
Cali	51.0%	21.0%	15.3%	11.1%	1.6%	15344
Caquetá	35.0%	25.9%	18.7%	17.6%	2.9%	1555
Cartagena	42.9%	23.0%	16.9%	15.5%	1.8%	8278
Cartago	48.9%	21.4%	15.6%	13.1%	1.1%	1046
Casanare	48.0%	22.8%	15.0%	13.4%	0.7%	2174
Cauca	36.3%	26.4%	18.5%	17.6%	1.3%	7501
Cesar	40.3%	23.3%	17.2%	18.0%	1.2%	4683
Chocó	31.3%	24.5%	19.3%	23.5%	1.4%	1701
Chía	62.9%	17.1%	10.1%	9.4%	0.5%	1323
Ciénaga	37.6%	24.7%	16.3%	19.8%	1.6%	1054
Cundinamarca	53.5%	20.4%	14.1%	11.2%	0.7%	12603
Córdoba	34.5%	25.0%	18.7%	20.4%	1.4%	8936
Cúcuta	53.9%	21.0%	13.5%	11.0%	0.7%	5698
Dosquebradas	52.0%	21.6%	14.0%	11.8%	0.6%	1210
Duitama	63.1%	17.8%	11.9%	6.9%	0.3%	1081
Envigado	64.9%	15.3%	10.5%	7.5%	1.7%	1300
Facatativá	60.5%	19.2%	11.2%	7.8%	1.2%	972
Florencia	43.0%	24.5%	16.1%	14.6%	1.8%	1290
Floridablanca	60.5%	18.2%	11.5%	9.3%	0.5%	1735
Fusagasugá	53.4%	18.9%	15.9%	10.3%	1.5%	889
Girardot	46.1%	24.3%	15.5%	13.4%	0.7%	753
Girón	51.5%	19.6%	15.5%	12.6%	0.8%	1082
Guainía	36.6%	26.3%	15.5%	18.8%	2.8%	213
Guaviare	40.0%	25.4%	15.5%	17.2%	1.9%	638
Huila	44.5%	24.7%	15.8%	13.8%	1.3%	4868
Ibagué	51.4%	20.9%	14.4%	12.1%	1.2%	4262
Ipiales	54.5%	20.4%	13.4%	10.7%	0.9%	886
Itagüí	44.5%	22.3%	17.3%	14.8%	1.1%	1396
Jamundí	42.9%	23.4%	18.4%	14.2%	1.0%	871
La Guajira	36.9%	23.8%	18.0%	20.0%	1.3%	2123
Lorica	30.6%	27.5%	19.1%	21.0%	1.8%	1138
Magangué	36.6%	24.1%	18.2%	19.8%	1.3%	938

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Magdalena	36.3%	24.2%	18.1%	19.8%	1.6%	5493
Maicao	35.6%	24.8%	18.7%	19.0%	1.9%	1232
Malambo	44.8%	19.5%	18.1%	17.5%	0.2%	647
Manizales	51.6%	20.4%	15.2%	12.0%	0.8%	2359
Medellín	48.4%	20.7%	15.8%	13.3%	1.7%	14697
Meta	44.3%	21.6%	17.2%	16.0%	0.9%	3749
Montería	42.6%	23.8%	16.0%	16.5%	1.0%	3472
Mosquera	62.0%	15.7%	12.1%	9.3%	0.8%	1038
Nariño	46.8%	24.5%	14.3%	11.9%	2.5%	5697
Neiva	52.5%	20.5%	15.1%	10.6%	1.3%	2661
Norte de Santander	48.1%	23.3%	14.9%	12.8%	1.0%	4832
Palmira	53.5%	21.3%	13.4%	10.6%	1.2%	2076
Pasto	55.2%	20.2%	13.1%	10.7%	0.7%	2821
Pereira	49.2%	21.9%	15.7%	11.5%	1.6%	3216
Piedecuesta	51.1%	21.8%	16.0%	9.9%	1.1%	967
Pitalito	52.7%	22.6%	14.2%	9.7%	0.9%	1014
Popayán	52.2%	20.9%	13.3%	12.1%	1.5%	2142
Putumayo	41.2%	26.2%	17.1%	13.8%	1.6%	2550
Quibdó	33.8%	24.7%	17.0%	20.2%	4.3%	1070
Quindío	45.6%	23.5%	15.4%	14.0%	1.6%	1677
Riohacha	38.9%	25.9%	16.6%	16.7%	2.0%	1338
Rionegro	55.6%	21.0%	13.1%	8.6%	1.7%	908
Risaralda	39.7%	25.0%	16.5%	16.6%	2.1%	1802
Sabaneta	61.5%	17.3%	9.3%	6.1%	5.9%	475
Sahagún	41.3%	23.5%	17.3%	17.3%	0.6%	976
San Andrés	37.4%	22.6%	20.0%	18.3%	1.7%	420
Santa Marta	44.0%	22.0%	16.0%	16.4%	1.6%	4382
Santander	51.9%	21.4%	14.0%	11.6%	0.9%	5408
Sincelejo	44.3%	23.4%	15.5%	15.6%	1.2%	2438
Soacha	51.0%	21.5%	14.8%	11.5%	1.2%	4454
Sogamoso	59.0%	18.7%	12.4%	9.3%	0.6%	1174
Soledad	47.4%	21.0%	15.2%	14.1%	2.2%	3697
Sucre	34.5%	27.0%	17.7%	19.5%	1.4%	5380
Tolima	41.7%	24.4%	16.6%	16.3%	1.0%	6451
Tuluá	50.1%	21.4%	14.7%	13.1%	0.6%	1636
Tumaco	34.1%	24.4%	17.7%	21.7%	2.2%	1293
Tunja	59.6%	17.6%	12.3%	9.8%	0.6%	1434
Turbo	32.4%	24.6%	19.5%	22.4%	1.2%	1310
Uribia	19.3%	31.8%	15.8%	32.2%	1.0%	311

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Valle del Cauca	42.0%	23.5%	18.2%	14.6%	1.6%	5857
Valledupar	44.9%	23.0%	15.8%	14.9%	1.4%	3720
Vaupés	31.3%	30.0%	11.7%	26.7%	0.4%	240
Vichada	37.6%	25.1%	17.4%	19.3%	0.7%	431
Villavicencio	53.5%	20.4%	14.2%	10.8%	1.0%	3818
Yopal	52.1%	21.5%	15.4%	10.6%	0.4%	1379
Yumbo	48.9%	21.1%	18.1%	10.9%	1.1%	930
Zipaquirá	58.6%	19.5%	11.6%	9.4%	0.9%	1081
Colombia	47.7%	21.9%	15.4%	13.6%	1.4%	346978

*Es posible que los porcentajes mostrados no sumen exactamente 100 debido a aproximaciones decimales.

• Pregunta 29.

En la tabla se relacionan antiguas medidas españolas de capacidad para los vinos.

Nombre	Capacidad en litros
1 botella	0,75623
1 cuartillo	0,504
1 copa	0,128

Tabla

Tres amigos bebieron vino. El primero consumió 1 botella y media de vino; el segundo, 3 cuartillos de vino y el tercero, 8 copas de vino. ¿Entre qué valores está la cantidad total de litros de vino que bebieron los tres amigos?

A. Entre 4,5 y 8 litros.
B. Entre 0,128 y 0,756 litros.
C. Entre 3,5 y 4 litros.
D. Entre 8 y 12,5 litros.

• Estructura

Competencia	Comunicación
Componente	Espacial - métrico
Afirmación	Identificar relaciones entre distintas unidades utilizadas para medir cantidades de la misma magnitud y determinar su pertinencia.
Nivel de desempeño	Avanzado
Respuesta Correcta	C

• Resultados a nivel nacional y de Entidad Territorial certificada (ETC)

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Amazonas	21.1%	26.8%	25.8%	24.1%	2.2%	503
Antioquia	23.9%	27.1%	30.6%	17.0%	1.4%	15846
Apartadó	25.0%	29.2%	27.2%	17.1%	1.6%	961
Arauca	22.4%	26.9%	33.8%	16.1%	0.8%	1698
Armenia	23.1%	24.8%	35.7%	15.5%	0.9%	2087

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Atlántico	25.7%	29.0%	26.9%	16.8%	1.6%	4931
Barrancabermeja	23.5%	25.7%	34.6%	14.1%	2.1%	1556
Barranquilla	23.0%	25.4%	34.1%	16.2%	1.3%	9853
Bello	24.0%	25.0%	34.0%	16.1%	1.0%	3014
Bogotá, D.C.	20.5%	24.5%	39.6%	14.1%	1.3%	56273
Bolívar	24.2%	29.8%	24.6%	19.5%	2.0%	7349
Boyacá	20.6%	27.1%	36.6%	15.2%	0.5%	6707
Bucaramanga	21.0%	23.0%	42.0%	13.1%	0.8%	3786
Buenaventura	25.5%	29.8%	24.8%	18.4%	1.6%	2444
Buga	21.5%	24.7%	37.9%	15.0%	0.9%	701
Caldas	22.3%	27.7%	32.6%	16.9%	0.5%	3575
Cali	23.0%	24.6%	35.6%	15.3%	1.5%	15344
Caquetá	22.0%	29.1%	29.3%	16.8%	2.8%	1555
Cartagena	25.9%	28.1%	28.6%	16.0%	1.4%	8278
Cartago	22.8%	27.0%	32.4%	17.1%	0.8%	1046
Casanare	21.8%	26.8%	33.7%	17.0%	0.7%	2174
Cauca	24.0%	29.7%	27.7%	17.3%	1.2%	7501
Cesar	26.4%	28.4%	27.6%	16.5%	1.0%	4683
Chocó	26.7%	26.2%	27.0%	18.8%	1.4%	1701
Chía	18.1%	21.2%	44.7%	15.2%	0.8%	1323
Ciénaga	27.5%	28.2%	25.3%	16.8%	2.2%	1054
Cundinamarca	20.1%	27.2%	37.5%	14.5%	0.8%	12603
Córdoba	24.6%	29.1%	26.8%	18.4%	1.1%	8936
Cúcuta	22.4%	24.4%	37.8%	14.7%	0.7%	5698
Dosquebradas	20.4%	27.5%	36.1%	15.5%	0.5%	1210
Duitama	18.0%	21.7%	44.8%	15.2%	0.3%	1081
Envigado	21.5%	17.8%	48.5%	10.8%	1.5%	1300
Facatativá	16.7%	26.2%	39.1%	17.3%	0.7%	972
Florencia	21.5%	28.4%	32.7%	15.8%	1.6%	1290
Floridablanca	19.4%	19.9%	45.8%	14.5%	0.5%	1735
Fusagasugá	20.9%	25.1%	39.7%	12.7%	1.6%	889
Girardot	22.0%	31.9%	29.7%	16.2%	0.1%	753
Girón	21.4%	26.4%	36.6%	15.1%	0.5%	1082
Guainía	22.5%	28.2%	23.9%	24.4%	0.9%	213
Guaviare	21.2%	30.6%	30.9%	15.5%	1.9%	638
Huila	21.6%	27.8%	32.2%	17.5%	0.9%	4868
Ibagué	22.0%	24.0%	36.8%	16.3%	0.9%	4262
Ipiales	21.8%	27.3%	33.3%	16.8%	0.8%	886
Itagüí	28.4%	23.4%	30.3%	17.0%	0.9%	1396

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Jamundí	25.8%	26.2%	30.2%	16.5%	1.3%	871
La Guajira	25.4%	29.3%	26.6%	18.1%	0.6%	2123
Lorica	25.2%	28.7%	23.4%	21.4%	1.2%	1138
Magangué	22.3%	32.8%	23.7%	20.4%	0.9%	938
Magdalena	24.6%	29.0%	26.9%	18.2%	1.4%	5493
Maicao	22.9%	29.2%	27.0%	19.6%	1.3%	1232
Malambo	20.4%	28.7%	34.3%	15.6%	0.9%	647
Manizales	21.2%	27.5%	35.1%	15.5%	0.7%	2359
Medellín	24.6%	25.0%	33.9%	15.0%	1.6%	14697
Meta	23.2%	27.6%	32.3%	16.2%	0.7%	3749
Montería	25.2%	27.9%	28.1%	17.9%	1.0%	3472
Mosquera	19.2%	24.6%	41.1%	13.8%	1.3%	1038
Nariño	19.4%	26.9%	35.9%	15.5%	2.2%	5697
Neiva	21.5%	26.2%	35.6%	15.5%	1.3%	2661
Norte de Santander	22.1%	25.4%	37.0%	14.6%	0.9%	4832
Palmira	21.5%	25.7%	36.7%	15.0%	1.0%	2076
Pasto	20.6%	24.8%	39.1%	14.6%	0.9%	2821
Pereira	22.6%	24.1%	37.2%	14.6%	1.5%	3216
Piedecuesta	20.0%	22.4%	42.0%	14.4%	1.2%	967
Pitalito	21.1%	24.9%	37.0%	16.0%	1.1%	1014
Popayán	21.8%	27.0%	35.3%	14.5%	1.3%	2142
Putumayo	21.8%	27.9%	33.2%	15.6%	1.5%	2550
Quibdó	26.5%	30.7%	20.1%	19.3%	3.3%	1070
Quindío	21.9%	25.5%	32.4%	18.8%	1.4%	1677
Riohacha	25.3%	27.3%	27.1%	18.5%	1.8%	1338
Rionegro	19.8%	21.8%	43.4%	13.5%	1.4%	908
Risaralda	23.6%	26.6%	31.0%	16.9%	1.9%	1802
Sabaneta	18.5%	25.5%	39.4%	10.5%	6.1%	475
Sahagún	22.6%	30.2%	26.8%	19.6%	0.7%	976
San Andrés	25.7%	31.0%	26.4%	15.7%	1.2%	420
Santa Marta	25.0%	27.0%	30.0%	16.7%	1.3%	4382
Santander	20.7%	25.7%	38.6%	14.4%	0.6%	5408
Sincelejo	23.4%	27.2%	29.9%	18.6%	0.9%	2438
Soacha	22.7%	28.3%	32.7%	15.2%	1.1%	4454
Sogamoso	19.9%	23.6%	42.8%	13.2%	0.5%	1174
Soledad	23.7%	26.8%	32.4%	15.3%	1.8%	3697
Sucre	24.9%	30.0%	25.0%	19.3%	0.7%	5380
Tolima	22.4%	29.8%	30.2%	16.6%	1.0%	6451
Tuluá	25.0%	27.1%	33.4%	14.1%	0.5%	1636

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Tumaco	24.0%	29.5%	22.7%	21.7%	2.1%	1293
Tunja	19.6%	23.6%	43.3%	13.0%	0.5%	1434
Turbo	27.3%	29.4%	22.4%	20.1%	0.8%	1310
Uribia	17.7%	30.9%	24.8%	26.7%	0.0%	311
Valle del Cauca	23.4%	27.2%	31.3%	16.7%	1.3%	5857
Valledupar	24.4%	28.6%	30.2%	15.5%	1.3%	3720
Vaupés	16.7%	27.9%	25.0%	30.4%	0.0%	240
Vichada	22.0%	30.9%	29.0%	17.6%	0.5%	431
Villavicencio	20.6%	25.1%	39.2%	14.1%	1.0%	3818
Yopal	23.3%	26.3%	36.3%	13.5%	0.7%	1379
Yumbo	22.0%	27.6%	34.7%	14.7%	0.9%	930
Zipaquirá	19.7%	24.6%	39.9%	15.3%	0.6%	1081
Colombia	22.6%	26.5%	33.9%	15.9%	1.2%	346978

*Es posible que los porcentajes mostrados no sumen exactamente 100 debido a aproximaciones decimales.

• Pregunta 30.

Un ingeniero tiene a cargo la construcción de 8,5 km de carretera, de la cual ha construido dos tramos de 1,6 km y 5 km, respectivamente. Para determinar la cantidad de kilómetros que faltan por construir, se proponen las siguientes estrategias:

I. Calcular la diferencia entre los dos tramos construidos y restarla de 8,5 km.
II. Sumar las tres cantidades suministradas.
III. Sumar los dos tramos construidos y restar de 8,5 km el resultado.

La opción que contiene la estrategia o estrategias que permiten determinar la cantidad que falta construir es

A. I y III únicamente.
B. II únicamente.
C. I y II únicamente.
D. III únicamente.

• Estructura

Competencia	Resolución
Componente	Numérico - variacional
Afirmación	Resolver problemas en situaciones aditivas y multiplicativas en el conjunto de los números reales.
Nivel de desempeño	Avanzado
Respuesta Correcta	D

• Resultados a nivel nacional y de Entidad Territorial certificada (ETC)

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Amazonas	28.0%	22.9%	19.3%	27.2%	2.6%	503
Antioquia	27.7%	20.3%	19.9%	30.4%	1.7%	15846
Apartadó	26.3%	22.6%	21.3%	28.2%	1.6%	961
Arauca	28.6%	20.2%	18.2%	32.1%	0.9%	1698
Armenia	25.7%	20.3%	21.2%	31.8%	0.9%	2087
Atlántico	28.4%	22.2%	21.1%	26.6%	1.8%	4931
Barrancabermeja	26.9%	19.0%	20.3%	31.6%	2.2%	1556
Barranquilla	28.1%	19.1%	17.7%	33.6%	1.6%	9853
Bello	28.5%	18.0%	18.3%	34.2%	0.9%	3014
Bogotá, D.C.	28.1%	17.6%	17.8%	35.2%	1.4%	56273

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Bolívar	27.9%	22.8%	22.3%	24.7%	2.2%	7349
Boyacá	26.8%	18.3%	18.6%	35.8%	0.6%	6707
Bucaramanga	27.8%	15.8%	15.7%	39.8%	0.9%	3786
Buenaventura	29.3%	21.4%	20.7%	26.8%	1.8%	2444
Buga	27.7%	19.8%	16.3%	35.0%	1.3%	701
Caldas	28.1%	18.2%	20.6%	32.6%	0.6%	3575
Cali	28.0%	19.1%	18.0%	33.4%	1.4%	15344
Caquetá	23.0%	21.3%	20.8%	32.0%	3.0%	1555
Cartagena	28.0%	21.7%	21.6%	27.2%	1.6%	8278
Cartago	27.1%	18.3%	18.5%	35.4%	0.8%	1046
Casanare	29.2%	20.6%	18.6%	30.7%	0.9%	2174
Cauca	26.9%	21.5%	21.2%	29.0%	1.3%	7501
Cesar	28.2%	21.8%	20.9%	27.7%	1.3%	4683
Chocó	25.5%	24.2%	21.0%	27.8%	1.6%	1701
Chía	30.0%	12.5%	16.6%	40.1%	0.9%	1323
Ciénaga	27.2%	21.8%	21.6%	27.2%	2.1%	1054
Cundinamarca	29.0%	16.9%	17.7%	35.5%	0.8%	12603
Córdoba	28.6%	22.9%	21.8%	25.5%	1.2%	8936
Cúcuta	28.2%	17.6%	17.5%	36.2%	0.6%	5698
Dosquebradas	27.4%	18.4%	18.6%	35.0%	0.5%	1210
Duitama	27.1%	14.1%	15.0%	43.7%	0.2%	1081
Envigado	25.8%	13.5%	14.3%	44.7%	1.6%	1300
Facatativá	27.7%	17.1%	17.0%	37.4%	0.8%	972
Florencia	26.4%	18.8%	19.8%	33.3%	1.7%	1290
Floridablanca	26.9%	16.3%	15.0%	41.4%	0.4%	1735
Fusagasugá	28.1%	17.5%	18.1%	34.8%	1.5%	889
Girardot	28.7%	21.0%	20.1%	29.7%	0.5%	753
Girón	32.4%	19.0%	17.9%	30.3%	0.3%	1082
Guainía	21.6%	23.5%	25.8%	27.2%	1.9%	213
Guaviare	23.5%	21.0%	20.1%	33.4%	2.0%	638
Huila	27.4%	19.2%	20.0%	32.5%	0.8%	4868
Ibagué	28.3%	19.3%	17.2%	34.1%	1.1%	4262
Ipiales	27.5%	18.4%	19.5%	34.0%	0.6%	886
Itagüí	26.1%	25.0%	21.0%	26.9%	1.1%	1396
Jamundí	30.1%	20.2%	19.3%	29.2%	1.3%	871
La Guajira	28.1%	21.7%	21.2%	27.8%	1.2%	2123
Lorica	27.1%	23.5%	24.3%	23.2%	2.0%	1138
Magangué	30.8%	21.6%	20.1%	26.1%	1.3%	938
Magdalena	25.8%	23.0%	21.8%	27.7%	1.7%	5493

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Maicao	28.0%	19.8%	22.8%	27.9%	1.5%	1232
Malambo	24.6%	18.9%	22.1%	33.1%	1.4%	647
Manizales	29.4%	16.5%	18.8%	34.5%	0.8%	2359
Medellín	27.7%	20.6%	19.7%	30.3%	1.7%	14697
Meta	27.1%	20.8%	20.2%	31.1%	0.8%	3749
Montería	28.9%	21.0%	21.1%	27.8%	1.2%	3472
Mosquera	28.5%	16.3%	15.6%	38.2%	1.3%	1038
Nariño	25.7%	17.2%	17.5%	37.2%	2.3%	5697
Neiva	29.1%	17.3%	19.1%	33.3%	1.2%	2661
Norte de Santander	28.3%	18.1%	17.9%	34.8%	1.0%	4832
Palmira	29.4%	16.6%	17.1%	35.9%	1.0%	2076
Pasto	28.7%	16.9%	17.5%	36.0%	0.9%	2821
Pereira	28.8%	17.6%	17.4%	34.5%	1.6%	3216
Piedecuesta	26.9%	17.3%	18.0%	36.6%	1.2%	967
Pitalito	28.1%	15.4%	18.7%	37.2%	0.6%	1014
Popayán	26.5%	19.0%	17.1%	35.8%	1.7%	2142
Putumayo	24.4%	21.0%	21.9%	31.1%	1.7%	2550
Quibdó	28.8%	21.5%	22.1%	23.5%	4.2%	1070
Quindío	28.4%	21.8%	19.7%	28.7%	1.4%	1677
Riohacha	28.0%	21.0%	19.9%	29.5%	1.6%	1338
Rionegro	25.8%	16.2%	17.5%	38.5%	2.0%	908
Risaralda	28.1%	20.1%	18.9%	30.9%	2.0%	1802
Sabaneta	29.5%	17.1%	15.6%	32.2%	5.7%	475
Sahagún	28.1%	20.3%	23.7%	27.4%	0.6%	976
San Andrés	29.0%	23.6%	21.2%	25.2%	1.0%	420
Santa Marta	25.8%	21.4%	21.7%	29.6%	1.4%	4382
Santander	26.9%	17.0%	17.0%	38.1%	0.9%	5408
Sincelejo	29.8%	20.5%	19.1%	29.5%	1.1%	2438
Soacha	29.4%	19.8%	19.4%	30.2%	1.2%	4454
Sogamoso	30.9%	16.4%	14.7%	37.6%	0.3%	1174
Soledad	27.6%	20.6%	19.0%	30.8%	2.0%	3697
Sucre	29.1%	21.4%	22.2%	26.1%	1.1%	5380
Tolima	28.2%	20.2%	20.0%	30.6%	1.0%	6451
Tuluá	26.8%	17.4%	19.4%	35.9%	0.5%	1636
Tumaco	29.5%	20.6%	22.4%	25.3%	2.1%	1293
Tunja	29.4%	14.8%	15.7%	39.3%	0.8%	1434
Turbo	31.7%	19.9%	21.0%	26.4%	1.0%	1310
Uribia	31.2%	17.0%	27.0%	24.4%	0.3%	311
Valle del Cauca	27.2%	20.3%	19.7%	31.2%	1.5%	5857

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Valledupar	28.1%	20.2%	20.4%	29.8%	1.5%	3720
Vaupés	22.9%	24.6%	22.1%	30.0%	0.4%	240
Vichada	25.8%	25.3%	18.3%	29.7%	0.9%	431
Villavicencio	27.2%	17.1%	17.0%	37.4%	1.3%	3818
Yopal	29.3%	17.7%	16.1%	36.2%	0.7%	1379
Yumbo	31.2%	17.0%	20.9%	29.4%	1.6%	930
Zipaquirá	32.4%	16.1%	16.8%	34.3%	0.4%	1081
Colombia	27.9%	19.3%	19.1%	32.3%	1.3%	346978

*Es posible que los porcentajes mostrados no sumen exactamente 100 debido a aproximaciones decimales.

• Pregunta 31.

Los siguientes son criterios para determinar si un número es divisible o no por 2 y por 3:

- Un número es divisible por 2 si termina en un número par.
- Un número es divisible por 3 si la suma de sus cifras es múltiplo de 3. Por ejemplo, 621 es divisible por 3 porque al sumar sus cifras (6 + 2 + 1), el resultado es 9, que es múltiplo de 3.

Ahora, un número es divisible por 6 si cumple las condiciones para que sea divisible por 2 y por 3. Según la información anterior, una razón correcta para determinar si 1.036 será divisible o no por 6 es:

A. No es divisible por 6, ya que tiene dos cifras que no son pares, 1 y 3.

B. Sí es divisible por 6, pues su última cifra es 6 y, por ende, múltiplo de 6.

C. No es divisible por 6, porque la suma de sus cifras es 10, que no es múltiplo de 3.

D. Sí es divisible por 6, porque el último dígito es par y también es múltiplo de 3.

• Estructura

Competencia	Razonamiento
Componente	Numérico - variacional
Afirmación	Verificar conjeturas acerca de los números reales, usando procesos inductivos y deductivos desde el lenguaje algebraico.
Nivel de desempeño	Avanzado
Respuesta Correcta	C

• Resultados a nivel nacional y de Entidad Territorial certificada (ETC)

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Amazonas	13.1%	24.3%	23.9%	36.4%	2.4%	503
Antioquia	16.3%	21.7%	31.6%	28.5%	1.9%	15846
Apartadó	17.0%	23.0%	30.3%	27.9%	1.9%	961
Arauca	15.1%	19.8%	33.3%	30.6%	1.1%	1698
Armenia	15.4%	22.4%	36.8%	24.0%	1.3%	2087
Atlántico	18.7%	24.7%	28.4%	26.1%	2.2%	4931
Barrancabermeja	17.3%	20.4%	33.5%	25.4%	3.3%	1556
Barranquilla	17.2%	19.7%	35.1%	26.4%	1.7%	9853
Bello	15.7%	20.3%	36.7%	25.9%	1.4%	3014

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Bogotá, D.C.	14.0%	19.3%	40.6%	24.5%	1.6%	56273
Bolívar	18.3%	23.4%	27.9%	27.6%	2.8%	7349
Boyacá	14.8%	21.2%	34.9%	28.2%	0.8%	6707
Bucaramanga	13.8%	18.3%	42.2%	24.9%	0.8%	3786
Buenaventura	18.7%	24.9%	23.6%	30.4%	2.3%	2444
Buga	12.3%	21.1%	39.2%	26.1%	1.3%	701
Caldas	15.6%	21.2%	32.1%	30.2%	0.9%	3575
Cali	16.4%	19.9%	36.7%	25.2%	1.8%	15344
Caquetá	17.4%	23.8%	29.1%	26.4%	3.3%	1555
Cartagena	18.7%	22.4%	32.8%	24.4%	1.7%	8278
Cartago	15.5%	21.0%	35.8%	26.9%	0.9%	1046
Casanare	16.9%	20.6%	33.1%	28.5%	0.9%	2174
Cauca	18.3%	23.2%	26.8%	29.8%	1.8%	7501
Cesar	17.3%	23.2%	31.2%	26.7%	1.6%	4683
Chocó	17.5%	24.0%	27.9%	28.5%	2.1%	1701
Chía	10.5%	17.0%	45.9%	25.5%	1.1%	1323
Ciénaga	19.9%	23.4%	25.1%	28.7%	2.8%	1054
Cundinamarca	13.9%	19.3%	38.1%	27.7%	1.0%	12603
Córdoba	18.9%	23.9%	27.5%	27.9%	1.8%	8936
Cúcuta	15.8%	19.4%	39.2%	24.7%	0.8%	5698
Dosquebradas	15.7%	18.2%	36.2%	29.1%	0.8%	1210
Duitama	9.7%	18.2%	46.6%	25.2%	0.3%	1081
Envigado	11.8%	15.7%	47.9%	22.5%	2.1%	1300
Facatativá	12.6%	16.0%	44.9%	25.6%	0.9%	972
Florencia	16.4%	22.1%	33.0%	26.3%	2.2%	1290
Floridablanca	13.8%	16.8%	44.1%	24.5%	0.7%	1735
Fusagasugá	14.5%	18.7%	39.3%	25.9%	1.7%	889
Girardot	15.4%	23.4%	37.3%	23.4%	0.5%	753
Girón	17.8%	18.4%	37.5%	25.4%	0.8%	1082
Guainía	16.0%	21.1%	24.9%	35.2%	2.8%	213
Guaviare	18.2%	23.8%	25.9%	30.1%	2.0%	638
Huila	15.8%	20.9%	30.7%	31.6%	1.0%	4868
Ibagué	14.5%	20.3%	35.5%	28.5%	1.3%	4262
Ipiales	14.8%	18.6%	44.0%	21.3%	1.2%	886
Itagüí	17.3%	21.3%	35.5%	24.7%	1.2%	1396
Jamundí	18.6%	21.9%	31.2%	26.8%	1.5%	871
La Guajira	17.6%	22.0%	29.5%	29.3%	1.6%	2123
Lorica	17.9%	25.3%	28.1%	26.6%	2.0%	1138
Magangué	16.6%	23.9%	29.5%	28.7%	1.3%	938

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Magdalena	17.9%	22.6%	26.8%	30.5%	2.1%	5493
Maicao	16.8%	22.1%	29.9%	29.5%	1.8%	1232
Malambo	17.3%	22.3%	35.4%	23.5%	1.5%	647
Manizales	13.7%	19.0%	40.3%	26.1%	0.9%	2359
Medellín	16.2%	20.8%	36.2%	24.8%	2.0%	14697
Meta	16.9%	23.1%	31.5%	27.4%	1.1%	3749
Montería	18.0%	23.1%	29.6%	28.0%	1.4%	3472
Mosquera	12.9%	17.0%	42.7%	26.2%	1.3%	1038
Nariño	14.8%	19.4%	34.5%	28.6%	2.7%	5697
Neiva	15.3%	20.1%	36.7%	26.6%	1.3%	2661
Norte de Santander	15.4%	20.3%	35.5%	27.5%	1.2%	4832
Palmira	15.4%	18.4%	37.5%	27.3%	1.4%	2076
Pasto	13.3%	19.6%	40.4%	25.6%	1.0%	2821
Pereira	14.6%	20.1%	35.9%	27.5%	2.0%	3216
Piedecuesta	13.8%	19.8%	37.8%	27.2%	1.4%	967
Pitalito	13.9%	20.9%	35.9%	28.3%	1.0%	1014
Popayán	13.9%	17.9%	39.7%	26.4%	2.0%	2142
Putumayo	16.1%	23.7%	30.4%	27.9%	1.9%	2550
Quibdó	20.6%	23.8%	24.8%	26.4%	4.5%	1070
Quindío	15.4%	22.0%	32.1%	28.7%	1.7%	1677
Riohacha	17.7%	23.1%	27.8%	29.2%	2.2%	1338
Rionegro	12.3%	17.2%	43.3%	25.0%	2.2%	908
Risaralda	16.8%	22.6%	30.7%	27.7%	2.2%	1802
Sabaneta	10.1%	13.1%	47.2%	23.8%	5.9%	475
Sahagún	16.4%	21.9%	32.1%	28.8%	0.8%	976
San Andrés	18.1%	21.4%	34.5%	24.0%	1.9%	420
Santa Marta	18.3%	21.3%	31.0%	27.2%	2.2%	4382
Santander	15.5%	18.8%	36.6%	28.2%	1.0%	5408
Sincelejo	18.4%	21.3%	30.9%	28.0%	1.4%	2438
Soacha	15.6%	22.3%	33.9%	27.0%	1.3%	4454
Sogamoso	12.7%	19.7%	41.8%	25.4%	0.4%	1174
Soledad	17.8%	21.9%	31.9%	26.0%	2.4%	3697
Sucre	19.4%	23.0%	26.9%	29.4%	1.3%	5380
Tolima	16.9%	22.7%	29.4%	29.7%	1.3%	6451
Tuluá	17.8%	19.8%	34.6%	27.0%	0.7%	1636
Tumaco	17.7%	24.0%	23.2%	32.3%	2.8%	1293
Tunja	12.0%	18.2%	43.0%	26.4%	0.5%	1434
Turbo	17.7%	23.4%	26.3%	31.1%	1.5%	1310
Uribia	16.7%	29.3%	20.6%	32.8%	0.6%	311

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Valle del Cauca	17.0%	22.5%	30.6%	28.4%	1.5%	5857
Valledupar	18.2%	22.2%	31.6%	26.1%	1.9%	3720
Vaupés	14.6%	27.9%	17.9%	38.3%	1.3%	240
Vichada	15.5%	20.4%	30.2%	32.0%	1.9%	431
Villavicencio	14.4%	19.8%	38.4%	25.9%	1.4%	3818
Yopal	17.0%	20.3%	36.9%	24.7%	1.1%	1379
Yumbo	13.8%	23.3%	33.2%	28.3%	1.4%	930
Zipaquirá	13.2%	18.0%	42.2%	26.3%	0.3%	1081
Colombia	16.0%	20.9%	34.7%	26.8%	1.6%	346978

*Es posible que los porcentajes mostrados no sumen exactamente 100 debido a aproximaciones decimales.

• Pregunta 32.

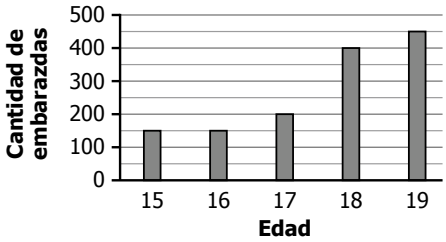
La tabla muestra la incidencia de embarazos en mujeres adolescentes en una ciudad.

Edad	Porcentaje de adolescentes que han estado embarazadas	Número de adolescentes que han estado embarazadas	Población total de mujeres adolescentes
15	5%	150	3.000
16	10%	150	1.500
17	10%	200	2.000
18	20%	400	2.000
19	30%	450	1.500

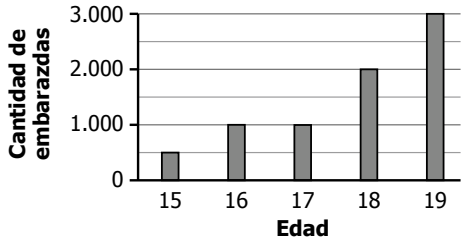
Tabla

La gráfica que ilustra la cantidad de embarazos por grupo de edad es

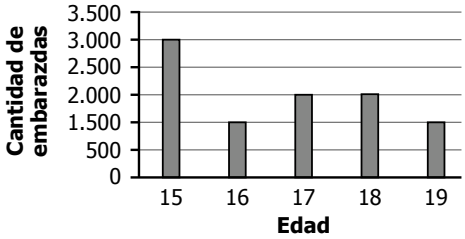
A.



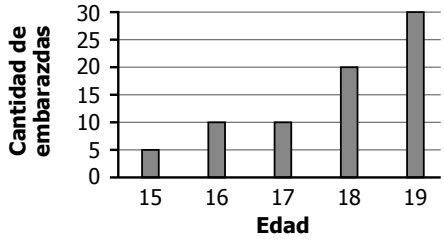
B.



C.



D.



• Estructura

Competencia	Comunicación
Componente	Aleatorio
Afirmación	Comparar, usar e interpretar datos que provienen de situaciones reales y traducir entre diferentes representaciones de un conjunto de datos.
Nivel de desempeño	Avanzado
Respuesta Correcta	A

- **Resultados a nivel nacional y de Entidad Territorial certificada (ETC)**

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Amazonas	27.2%	19.3%	33.0%	18.1%	2.4%	503
Antioquia	36.9%	16.6%	26.2%	18.7%	1.6%	15846
Apartadó	38.5%	19.1%	23.1%	17.3%	2.0%	961
Arauca	42.9%	13.0%	25.4%	17.7%	1.0%	1698
Armenia	42.4%	15.7%	25.0%	15.9%	1.0%	2087
Atlántico	35.4%	18.3%	24.1%	20.4%	1.9%	4931
Barrancabermeja	42.9%	15.3%	21.9%	17.7%	2.2%	1556
Barranquilla	43.7%	14.4%	22.5%	18.1%	1.3%	9853
Bello	44.4%	14.0%	23.1%	17.2%	1.3%	3014
Bogotá, D.C.	44.5%	13.1%	24.2%	16.7%	1.5%	56273
Bolívar	32.7%	19.1%	25.3%	21.1%	1.9%	7349
Boyacá	40.5%	14.1%	26.7%	18.1%	0.5%	6707
Bucaramanga	49.6%	11.4%	22.1%	16.0%	0.9%	3786
Buenaventura	32.2%	16.7%	28.4%	20.9%	1.8%	2444
Buga	38.2%	13.3%	29.5%	18.1%	0.9%	701
Caldas	33.1%	17.1%	27.7%	21.5%	0.7%	3575
Cali	42.9%	13.8%	24.0%	17.8%	1.5%	15344
Caquetá	31.3%	18.6%	28.8%	18.6%	2.6%	1555
Cartagena	38.3%	17.2%	23.9%	19.2%	1.3%	8278
Cartago	45.4%	11.6%	22.7%	19.7%	0.7%	1046
Casanare	39.0%	13.4%	28.1%	18.8%	0.7%	2174
Cauca	31.2%	17.2%	28.7%	21.6%	1.3%	7501
Cesar	37.5%	16.9%	25.4%	19.1%	1.1%	4683
Chocó	30.9%	20.8%	24.6%	22.5%	1.2%	1701
Chía	45.4%	11.0%	24.9%	17.8%	0.8%	1323
Ciénaga	30.9%	23.2%	26.1%	17.8%	1.9%	1054
Cundinamarca	41.9%	12.9%	26.0%	18.4%	0.8%	12603
Córdoba	33.7%	19.6%	26.6%	19.1%	1.0%	8936
Cúcuta	45.8%	11.6%	24.5%	17.5%	0.6%	5698
Dosquebradas	41.2%	13.6%	26.1%	18.3%	0.7%	1210
Duitama	52.6%	9.5%	19.2%	18.5%	0.1%	1081
Envigado	53.4%	11.8%	19.1%	14.1%	1.6%	1300
Facatativá	46.9%	10.0%	26.0%	16.2%	0.9%	972
Florencia	37.5%	14.7%	26.4%	19.8%	1.6%	1290
Floridablanca	52.2%	11.2%	20.1%	15.9%	0.7%	1735
Fusagasugá	46.7%	13.5%	20.4%	17.7%	1.8%	889
Girardot	36.3%	16.7%	25.5%	21.4%	0.1%	753
Girón	43.7%	12.7%	24.3%	18.9%	0.5%	1082

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Guainía	29.6%	18.3%	32.4%	18.8%	0.9%	213
Guaviare	36.5%	16.1%	27.0%	18.8%	1.6%	638
Huila	36.0%	13.6%	28.0%	21.6%	0.9%	4868
Ibagué	43.2%	14.0%	24.8%	16.8%	1.2%	4262
Ipiales	43.9%	11.5%	23.4%	20.8%	0.5%	886
Itagüí	42.4%	18.3%	21.4%	17.1%	0.8%	1396
Jamundí	38.3%	16.2%	24.5%	20.1%	0.9%	871
La Guajira	35.7%	17.7%	25.6%	20.3%	0.7%	2123
Lorica	34.4%	18.5%	25.0%	21.1%	1.1%	1138
Magangué	31.4%	18.9%	28.3%	20.7%	0.7%	938
Magdalena	33.0%	17.2%	26.6%	21.8%	1.4%	5493
Maicao	34.0%	17.3%	25.6%	21.7%	1.4%	1232
Malambo	43.6%	17.3%	20.2%	18.2%	0.6%	647
Manizales	41.2%	13.5%	24.7%	19.8%	0.8%	2359
Medellín	43.3%	15.5%	22.8%	16.8%	1.6%	14697
Meta	37.5%	17.9%	25.8%	18.2%	0.6%	3749
Montería	38.0%	16.4%	24.9%	19.6%	1.1%	3472
Mosquera	48.1%	10.1%	23.8%	17.1%	0.9%	1038
Nariño	36.9%	14.5%	26.6%	19.8%	2.2%	5697
Neiva	44.7%	11.2%	24.2%	18.9%	1.1%	2661
Norte de Santander	39.8%	14.1%	26.1%	19.3%	0.8%	4832
Palmira	44.1%	11.1%	25.6%	18.0%	1.2%	2076
Pasto	44.2%	10.7%	25.2%	19.1%	0.8%	2821
Pereira	39.8%	14.1%	24.9%	19.6%	1.7%	3216
Piedecuesta	47.7%	10.1%	24.8%	16.2%	1.1%	967
Pitalito	44.7%	11.6%	25.6%	17.5%	0.6%	1014
Popayán	38.7%	13.5%	26.8%	19.5%	1.5%	2142
Putumayo	36.3%	15.5%	26.9%	19.9%	1.3%	2550
Quibdó	31.6%	18.4%	23.5%	22.9%	3.6%	1070
Quindío	39.8%	16.0%	23.7%	19.0%	1.5%	1677
Riohacha	37.4%	18.8%	24.6%	17.9%	1.3%	1338
Rionegro	46.8%	13.9%	20.8%	17.1%	1.4%	908
Risaralda	34.6%	17.8%	26.5%	18.9%	2.2%	1802
Sabaneta	48.2%	12.0%	19.2%	14.9%	5.7%	475
Sahagún	35.0%	17.1%	24.4%	23.2%	0.3%	976
San Andrés	38.3%	18.8%	22.1%	19.0%	1.7%	420
Santa Marta	36.8%	18.6%	24.4%	18.8%	1.4%	4382
Santander	43.8%	12.7%	24.7%	18.2%	0.6%	5408
Sincelejo	40.7%	16.2%	24.2%	17.9%	0.9%	2438

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Soacha	41.5%	13.0%	26.0%	18.5%	1.0%	4454
Sogamoso	45.6%	12.9%	23.4%	17.7%	0.3%	1174
Soledad	39.6%	15.1%	24.7%	18.6%	1.9%	3697
Sucre	30.4%	19.2%	28.0%	21.5%	0.8%	5380
Tolima	34.0%	16.9%	28.4%	19.8%	0.9%	6451
Tuluá	39.8%	14.5%	26.2%	18.8%	0.7%	1636
Tumaco	28.2%	21.0%	26.8%	22.4%	1.7%	1293
Tunja	48.0%	11.2%	23.7%	16.5%	0.6%	1434
Turbo	31.1%	20.7%	26.7%	20.7%	0.8%	1310
Uribia	26.0%	22.8%	26.0%	25.1%	0.0%	311
Valle del Cauca	36.5%	16.4%	26.4%	19.4%	1.3%	5857
Valledupar	39.5%	16.0%	23.1%	20.1%	1.4%	3720
Vaupés	29.2%	14.2%	31.3%	23.3%	2.1%	240
Vichada	30.9%	19.5%	31.6%	17.2%	0.9%	431
Villavicencio	43.9%	13.6%	24.6%	16.8%	1.2%	3818
Yopal	45.8%	13.6%	22.8%	17.4%	0.4%	1379
Yumbo	37.5%	13.4%	28.6%	19.5%	1.0%	930
Zipaquirá	42.9%	11.7%	26.4%	19.1%	0.0%	1081
Colombia	40.1%	15.0%	25.1%	18.6%	1.3%	346978

*Es posible que los porcentajes mostrados no sumen exactamente 100 debido a aproximaciones decimales.

• Pregunta 33.

Un polígono es convexo si contiene todos los posibles segmentos de recta que se puedan unir entre un par de puntos pertenecientes a su superficie, sin que los segmentos corten un lado o salgan de la figura (*ver* figura).

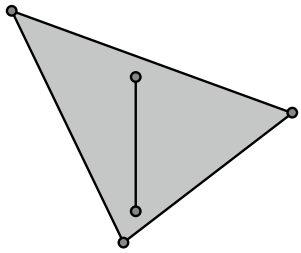


Figura 1. Polígono convexo

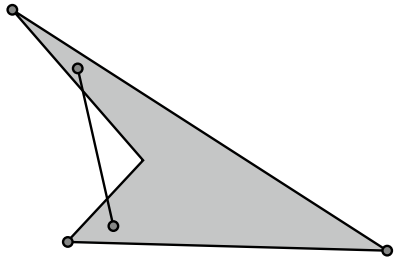


Figura 2. Polígono no convexo

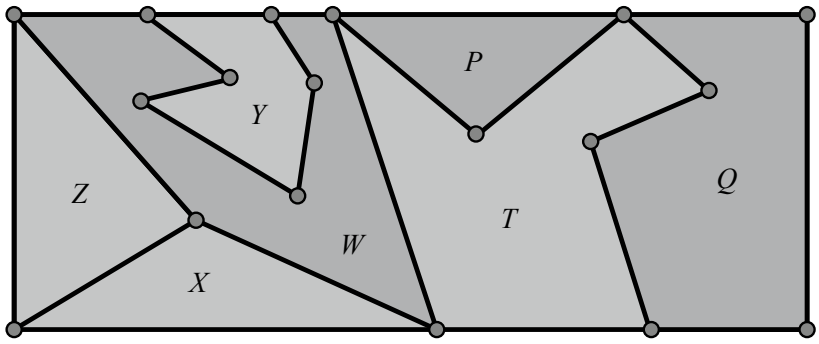


Figura 3

En el anterior cuadro compuesto por los polígonos Q, P, Y, T, W, X y Z, ¿cuáles polígonos son **NO** convexos?

A. W, X, Y, Z.
B. Q, T, W, Y.
C. P, T, Y, Z.
D. P, T, W, X.

• Estructura

Competencia	Razonamiento
Componente	Espacial - métrico
Afirmación	Argumentar formal e informalmente sobre propiedades y relaciones de figuras planas y sólidos.
Nivel de desempeño	Satisfactorio
Respuesta Correcta	B

• Resultados a nivel nacional y de Entidad Territorial certificada (ETC)

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Amazonas	17.1%	52.7%	17.9%	10.1%	2.2%	503
Antioquia	17.7%	48.8%	19.9%	11.2%	2.3%	15846
Apartadó	17.7%	45.7%	20.3%	13.9%	2.4%	961
Arauca	15.7%	52.7%	18.8%	11.6%	1.2%	1698
Armenia	16.3%	50.5%	20.4%	11.1%	1.7%	2087
Atlántico	19.9%	44.0%	21.8%	11.8%	2.5%	4931
Barrancabermeja	17.7%	47.3%	20.3%	11.5%	3.2%	1556
Barranquilla	17.0%	51.9%	18.2%	10.9%	2.0%	9853
Bello	17.8%	53.3%	18.3%	9.1%	1.6%	3014
Bogotá, D.C.	14.7%	57.3%	16.8%	9.2%	2.0%	56273
Bolívar	20.1%	41.6%	23.0%	12.5%	2.7%	7349
Boyacá	15.8%	53.7%	19.4%	10.3%	0.9%	6707
Bucaramanga	15.4%	57.6%	16.7%	9.0%	1.3%	3786
Buenaventura	21.8%	43.4%	20.4%	11.5%	2.8%	2444
Buga	16.4%	53.1%	18.4%	11.3%	0.9%	701
Caldas	18.2%	49.3%	19.4%	12.1%	1.1%	3575
Cali	16.2%	53.8%	17.4%	10.4%	2.2%	15344
Caquetá	16.1%	52.1%	16.7%	12.2%	3.0%	1555
Cartagena	19.2%	46.4%	20.7%	11.9%	1.9%	8278
Cartago	16.9%	52.3%	18.8%	10.9%	1.1%	1046
Casanare	16.7%	53.2%	18.9%	10.1%	1.2%	2174
Cauca	18.4%	47.2%	21.1%	11.4%	1.9%	7501
Cesar	18.0%	45.1%	22.5%	12.8%	1.7%	4683
Chocó	23.9%	39.6%	21.2%	13.5%	1.8%	1701
Chía	13.5%	61.6%	15.5%	8.5%	1.0%	1323
Ciénaga	22.4%	38.5%	23.2%	13.2%	2.7%	1054
Cundinamarca	14.8%	55.3%	18.4%	10.2%	1.2%	12603

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Córdoba	19.7%	44.8%	21.4%	12.5%	1.5%	8936
Cúcuta	15.7%	54.0%	18.4%	10.9%	1.0%	5698
Dosquebradas	18.0%	51.1%	17.4%	11.9%	1.7%	1210
Duitama	11.8%	61.5%	18.3%	7.9%	0.5%	1081
Envigado	13.8%	56.8%	17.3%	9.7%	2.4%	1300
Facatativá	13.2%	58.8%	18.2%	8.0%	1.7%	972
Florencia	16.0%	51.9%	17.8%	12.0%	2.4%	1290
Floridablanca	14.9%	59.3%	17.3%	8.0%	0.6%	1735
Fusagasugá	14.2%	55.5%	19.6%	8.8%	2.0%	889
Girardot	17.1%	49.4%	18.9%	13.5%	1.1%	753
Girón	16.9%	51.7%	19.9%	10.7%	0.8%	1082
Guainía	16.9%	54.0%	14.6%	11.7%	2.8%	213
Guaviare	13.9%	50.9%	21.3%	12.1%	1.7%	638
Huila	17.4%	51.7%	18.4%	11.1%	1.4%	4868
Ibagué	15.7%	54.9%	18.0%	9.8%	1.6%	4262
Ipiales	12.9%	54.7%	21.4%	9.9%	1.0%	886
Itagüí	19.1%	47.3%	20.4%	11.9%	1.3%	1396
Jamundí	17.0%	52.9%	20.0%	8.4%	1.7%	871
La Guajira	19.0%	45.3%	21.0%	13.3%	1.4%	2123
Lorica	19.3%	43.8%	21.5%	13.7%	1.6%	1138
Magangué	18.1%	46.2%	21.5%	12.4%	1.8%	938
Magdalena	20.9%	44.3%	20.5%	12.3%	2.0%	5493
Maicao	18.3%	46.7%	20.6%	12.3%	2.0%	1232
Malambo	18.4%	49.5%	19.9%	10.7%	1.5%	647
Manizales	18.1%	51.0%	19.0%	10.7%	1.2%	2359
Medellín	17.2%	50.4%	19.1%	11.1%	2.1%	14697
Meta	16.5%	51.6%	20.1%	10.7%	1.1%	3749
Montería	19.1%	48.0%	20.4%	11.0%	1.5%	3472
Mosquera	14.9%	59.2%	16.7%	8.0%	1.2%	1038
Nariño	16.2%	51.6%	17.8%	11.5%	2.9%	5697
Neiva	16.9%	55.8%	15.7%	10.0%	1.6%	2661
Norte de Santander	15.9%	52.0%	18.6%	12.4%	1.1%	4832
Palmira	15.2%	55.8%	17.1%	10.3%	1.6%	2076
Pasto	14.8%	56.6%	17.2%	10.1%	1.3%	2821
Pereira	14.9%	52.9%	19.3%	10.4%	2.5%	3216
Piedecuesta	16.3%	54.2%	17.5%	10.2%	1.8%	967
Pitalito	16.1%	55.3%	18.2%	9.3%	1.1%	1014
Popayán	15.7%	52.3%	18.0%	11.8%	2.2%	2142
Putumayo	15.8%	51.1%	20.3%	10.9%	2.0%	2550

Continúa en la siguiente página

ETC/País	A	B	C	D	Omisión y multimarca	N° estudiantes
Quibdó	21.6%	40.2%	20.9%	13.3%	4.0%	1070
Quindío	17.8%	49.4%	19.4%	11.4%	2.0%	1677
Riohacha	19.4%	48.7%	19.1%	10.5%	2.4%	1338
Rionegro	17.2%	53.9%	17.0%	10.2%	1.8%	908
Risaralda	18.1%	47.3%	21.5%	10.3%	2.8%	1802
Sabaneta	13.5%	58.9%	13.9%	7.8%	5.9%	475
Sahagún	17.7%	46.7%	20.0%	14.1%	1.4%	976
San Andrés	19.5%	42.6%	23.6%	12.1%	2.1%	420
Santa Marta	18.6%	48.3%	20.2%	10.9%	2.0%	4382
Santander	16.0%	53.7%	18.3%	11.0%	1.0%	5408
Sincelejo	17.6%	50.4%	19.0%	11.6%	1.4%	2438
Soacha	15.4%	55.9%	17.8%	9.3%	1.6%	4454
Sogamoso	14.7%	57.3%	16.9%	10.6%	0.4%	1174
Soledad	18.3%	50.1%	17.9%	11.3%	2.4%	3697
Sucre	20.2%	44.3%	22.0%	12.1%	1.4%	5380
Tolima	17.6%	48.4%	20.5%	12.0%	1.4%	6451
Tuluá	16.0%	53.1%	19.7%	10.4%	0.9%	1636
Tumaco	21.9%	40.3%	21.1%	13.8%	2.9%	1293
Tunja	12.4%	61.2%	16.2%	9.3%	0.9%	1434
Turbo	15.8%	46.7%	22.1%	13.8%	1.6%	1310
Uribia	20.9%	43.4%	18.3%	15.4%	1.9%	311
Valle del Cauca	17.8%	48.7%	20.2%	11.3%	1.9%	5857
Valledupar	18.8%	48.5%	19.6%	11.0%	2.0%	3720
Vaupés	17.1%	49.2%	20.0%	10.4%	3.3%	240
Vichada	20.6%	47.6%	19.0%	11.1%	1.6%	431
Villavicencio	15.1%	56.3%	17.2%	9.7%	1.7%	3818
Yopal	16.0%	56.2%	17.0%	10.2%	0.7%	1379
Yumbo	19.2%	50.3%	18.9%	10.6%	0.9%	930
Zipaquirá	13.8%	57.4%	17.3%	11.2%	0.4%	1081
Colombia	16.9%	51.6%	18.9%	10.8%	1.8%	346978

*Es posible que los porcentajes mostrados no sumen exactamente 100 debido a aproximaciones decimales.

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